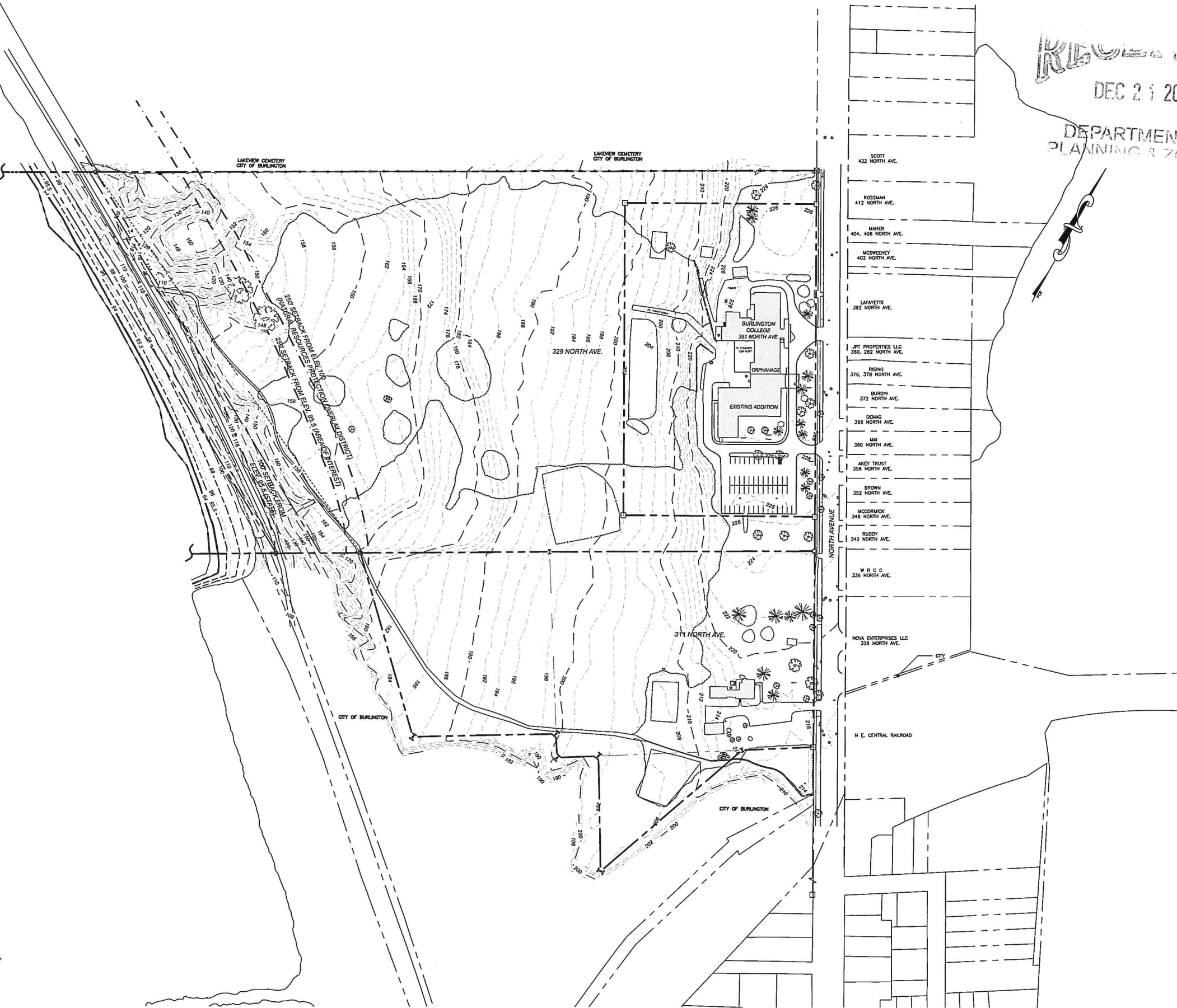
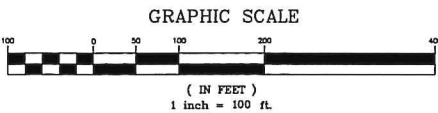



- LEGEND**
- APPROXIMATE PROPERTY LINE
 - APPROXIMATE SETBACK LINE
 - EXISTING CONTOUR
 - EXISTING CURB
 - EXISTING CHAINLINK FENCE
 - EXISTING WIRE FENCE
 - EXISTING GRAVEL
 - EXISTING PAVEMENT
 - EXISTING GUARD RAIL
 - EXISTING ELECTRIC
 - EXISTING FORCEMAIN
 - EXISTING GAS
 - EXISTING STORM
 - EXISTING GRAVITY SEWER
 - EXISTING TELEPHONE
 - EXISTING WATER
 - EXISTING SWALE
 - EXISTING SEWER MANHOLE
 - EXISTING STORM MANHOLE
 - EXISTING CATCH BASIN
 - EXISTING WELL
 - EXISTING HYDRANT
 - EXISTING SHUT OFF
 - EXISTING UTILITY POLE
 - EXISTING LIGHT POLE
 - EXISTING GUY WIRE/POLE
 - EXISTING SIGN
 - EXISTING DECIDUOUS TREE
 - EXISTING CONIFEROUS TREE
 - EDGE OF BRUSHWOODS
 - IRON ROD/PIPE FOUND
 - CONCRETE MONUMENT FOUND
 - RAILROAD RAIL FOUND
 - TEST PIT
 - PROJECT BENCHMARK

NOTES

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- THIS PROPERTY LAYS WITHIN THE WATERFRONT RESIDENTIAL MEDIUM DENSITY ZONING DISTRICT AND THE NATURAL RESOURCES PROTECTION OVERLAY DISTRICT.



SITE ENGINEER:



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CHECKED: SAV
APPROVED: SAV

OWNER:


BURLINGTON COLLEGE

351 NORTH AVE
BURLINGTON VERMONT 05401

PROJECT:

BUILDING RENOVATION AND SITE IMPROVEMENTS
329, 351 NORTH AVE.
BURLINGTON, VT

LOCATION MAP

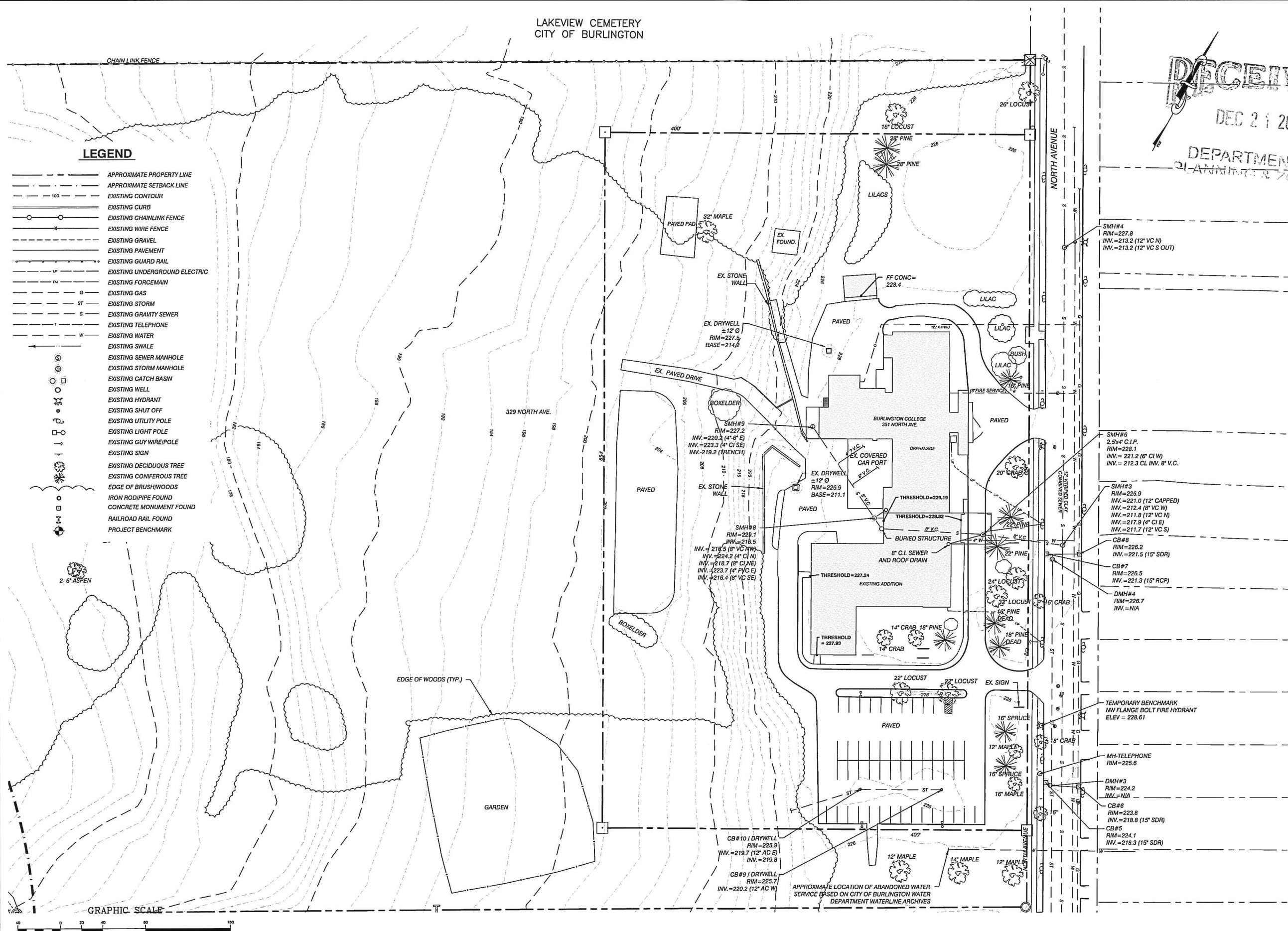


1" = 200'

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

EXISTING CONDITIONS OVERALL SITE PLAN

DATE	DRAWING NUMBER
12/18/2015	C1.0
SCALE 1" = 100'	
PROJ. NO. 14215	



SITE ENGINEER:

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OWNER: BURLINGTON COLLEGE

351 NORTH AVE
BURLINGTON VERMONT 05401

PROJECT: BUILDING RENOVATION AND SITE IMPROVEMENTS
329, 351 NORTH AVE.
BURLINGTON, VT

LOCATION MAP
1" = 2000'

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

EXISTING CONDITIONS SITE PLAN

DATE: 12/18/2015
SCALE: 1" = 40'
PROJ. NO. 14215

DRAWING NUMBER: **C1.1**

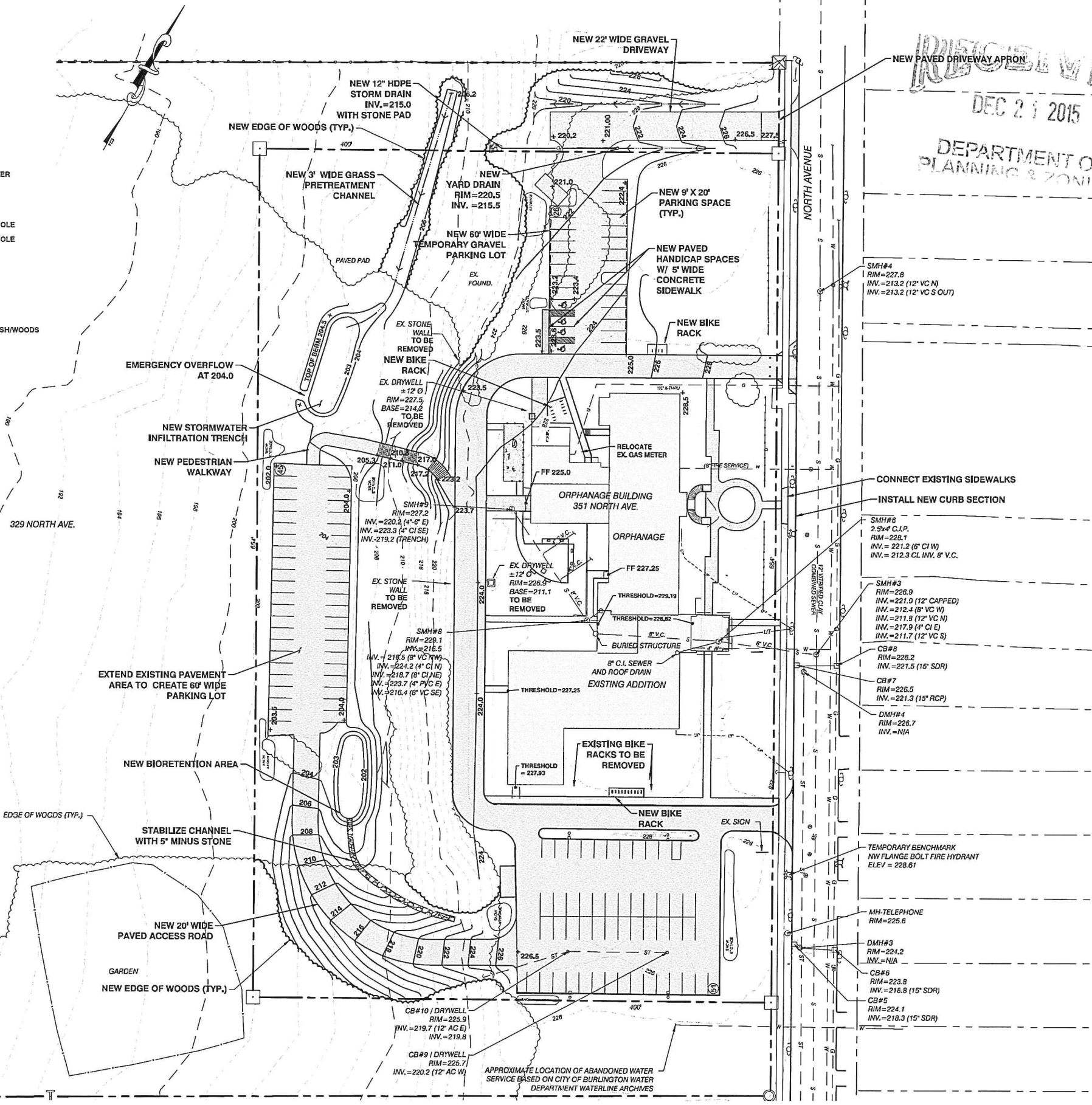
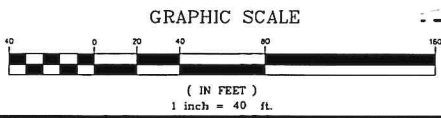
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---	APPROXIMATE SETBACK LINE	---	PROPOSED CURB
---	EXISTING CONTOUR	---	PROPOSED FENCE
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---	EXISTING PAVEMENT	---	PROPOSED FORCEMAIN
---	EXISTING GUARD RAIL	---	PROPOSED GAS
---	EXISTING UNDERGROUND ELECTRIC	---	PROPOSED STORM
---	EXISTING FORCEMAIN	---	PROPOSED GRAVITY SEWER
---	EXISTING GAS	---	PROPOSED TELEPHONE
---	EXISTING STORM	---	PROPOSED WATER
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---	EXISTING SWALE	---	PROPOSED CATCH BASIN
---	EXISTING SEWER MANHOLE	---	PROPOSED WELL
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---	EXISTING CATCH BASIN	---	PROPOSED SHUT OFF
---	EXISTING WELL	---	PROPOSED UTILITY POLE
---	EXISTING HYDRANT	---	PROPOSED LIGHT POLE
---	EXISTING SHUT OFF	---	PROPOSED EDGE OF BRUSHWOODS
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---	IRON ROD/PIPE FOUND	---	
---	CONCRETE MONUMENT FOUND	---	
---	RAILROAD RAIL FOUND	---	
---	PROJECT BENCHMARK	---	

PLAN NOTES:

1. REFER TO LANDSCAPE ARCHITECTURAL PLANS FOR PROPOSED LANDSCAPE MATERIALS, LIGHTING, AND PLANTING PLAN.

- NOTES**
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SITE ENGINEER:

CIVIL ENGINEERING ASSOCIATES, INC.
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OWNER: BURLINGTON COLLEGE
351 NORTH AVE
BURLINGTON VERMONT 05401

PROJECT: BUILDING RENOVATION AND SITE IMPROVEMENTS 329, 351 NORTH AVE. BURLINGTON, VT

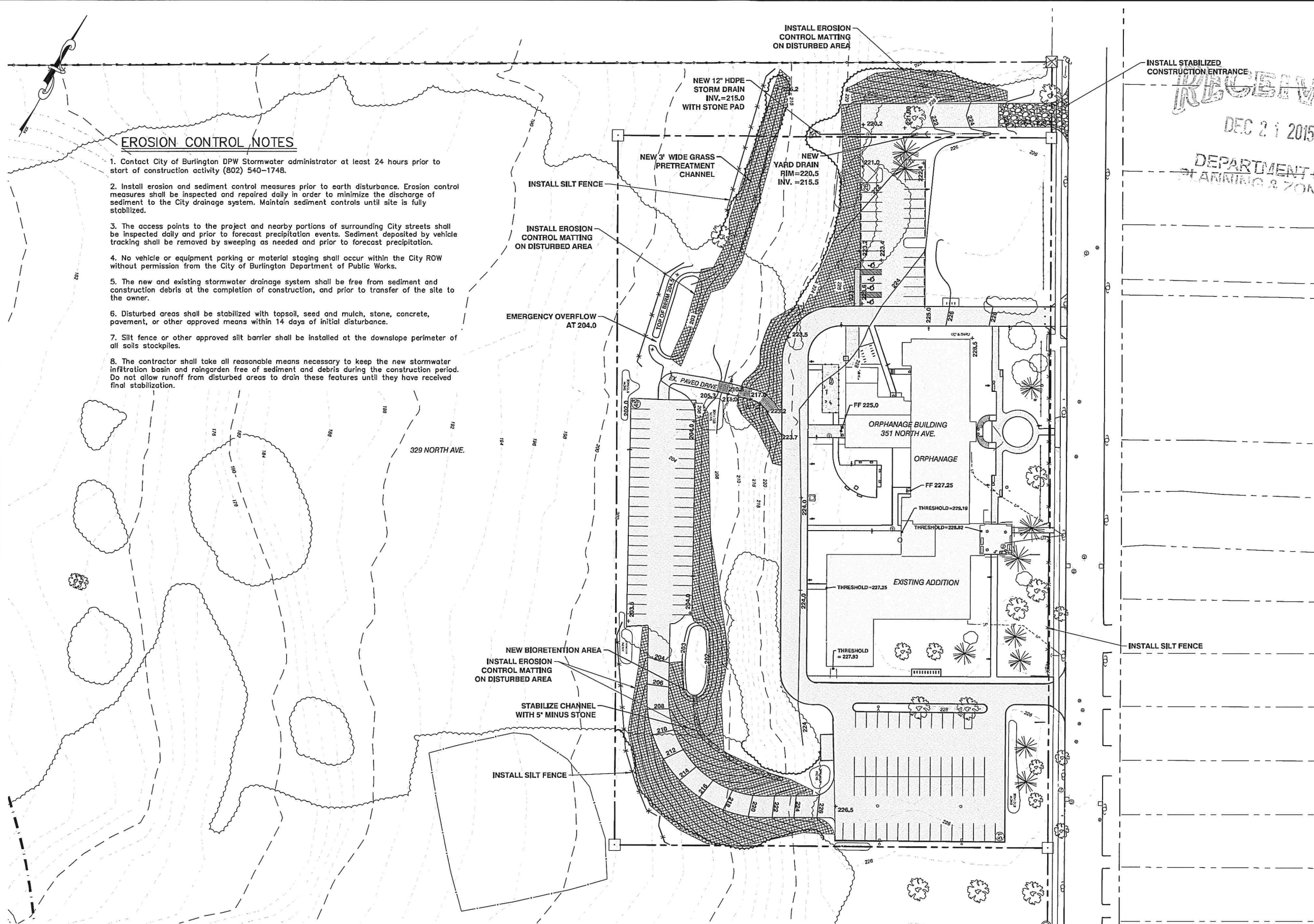
LOCATION MAP
1" = 200'

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

PROPOSED SITE, GRADING & DRAINAGE PLAN

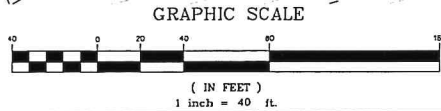
DATE: 12/18/2015
SCALE: 1" = 40'
PROJ. NO.: 14215

DRAWING NUMBER: C2.0



EROSION CONTROL NOTES

1. Contact City of Burlington DPW Stormwater administrator at least 24 hours prior to start of construction activity (802) 540-1748.
2. Install erosion and sediment control measures prior to earth disturbance. Erosion control measures shall be inspected and repaired daily in order to minimize the discharge of sediment to the City drainage system. Maintain sediment controls until site is fully stabilized.
3. The access points to the project and nearby portions of surrounding City streets shall be inspected daily and prior to forecast precipitation events. Sediment deposited by vehicle tracking shall be removed by sweeping as needed and prior to forecast precipitation.
4. No vehicle or equipment parking or material staging shall occur within the City ROW without permission from the City of Burlington Department of Public Works.
5. The new and existing stormwater drainage system shall be free from sediment and construction debris at the completion of construction, and prior to transfer of the site to the owner.
6. Disturbed areas shall be stabilized with topsoil, seed and mulch, stone, concrete, pavement, or other approved means within 14 days of initial disturbance.
7. Silt fence or other approved silt barrier shall be installed at the downslope perimeter of all soils stockpiles.
8. The contractor shall take all reasonable means necessary to keep the new stormwater infiltration basin and raingarden free of sediment and debris during the construction period. Do not allow runoff from disturbed areas to drain these features until they have received final stabilization.



SITE ENGINEER:

CIVIL ENGINEERING ASSOCIATES, INC.
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DEPARTMENT OF
PLANNING & ZONING

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OWNER:
BURLINGTON COLLEGE

351 NORTH AVE
BURLINGTON VERMONT 05401

PROJECT:

BUILDING RENOVATION AND SITE IMPROVEMENTS
329, 351 NORTH AVE.
BURLINGTON, VT

LOCATION MAP
1" = 2000'

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

EROSION CONTROL PLAN

DATE 12/18/2015 SCALE 1" = 40' PROJ. NO. 14215	DRAWING NUMBER C3.0
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Introduction

This project is subject to the terms and conditions of the authorization from the State of Vermont to discharge construction related storm water runoff.

Coverage under the State Construction General Permit 3-9020 is required for any construction activity that disturbs 1 or more acres of land, or is part of a larger development plan that will disturb 1 or more acres.

This project has been deemed to qualify as a Low Risk Site which is subject to the erosion prevention and sediment control (EPSC) standards set forth in the State of Vermont's **Low Risk Site Handbook for Erosion Prevention and Sediment Control**

The following narrative and implementation requirements represent the minimum standard for which this site is required to be maintained as regulated by the State of Vermont.

Any best management practices (BMP's) depicted on the project's EPSC Site plan which go beyond the Handbook requirements are considered to be integral to the management of the site and represent components of the municipal EPSC approval for the project which shall be implemented.

The EPSC plan depicts one snap shot in time of the site. All construction sites are fluid in their day to day exposures and risks as it relates to minimizing sediment loss from the site. It is the responsibility of the Contractor to implement the necessary BMP's to comply with the Low Risk Handbook standards outlined on this sheet based on the interim site disturbance conditions which may or may not be shown on the EPSC Site Plan.

Specific BMP's which are critical to allowing the project to be considered a Low risk site include the items checked below:

- Limit the amount of disturbed earth to two acres or less at any one time.
- There shall be a maximum of 7 consecutive days of disturbed earth exposure in any location before temporary or final stabilization is implemented.

1. Mark Site Boundaries

Purpose:
Mark the site boundaries to identify the limits of construction. Delineating your site will help to limit the area of disturbance, preserve existing vegetation and limit erosion potential on the site.

How to comply:
Before beginning construction, walk the site boundaries and flag trees, post signs, or install orange safety fence. Fence is required on any boundary within 50 feet of a stream, lake, pond or wetland, unless the area is already developed (existing roads, buildings, etc.)

2. Limit Disturbance Area

Purpose:
Limit the amount of soil exposed at one time to reduce the potential erosion on site.

Requirements:
The permitted disturbance area is specified on the site's written authorization to discharge. Only the acreage listed on the authorization form may be exposed at any given time.

How to comply:
Plan ahead and phase the construction activities to ensure that no more than the permitted acreage is disturbed at one time. Be sure to properly stabilize exposed soil with seed and mulch or erosion control matting before beginning work in a new section of the site.

3. Stabilize Construction Entrance

Purpose:
A stabilized construction entrance helps remove mud from vehicle wheels to prevent tracking onto streets.

Requirements:
If there will be any vehicle traffic off of the construction site, you must install a stabilized construction entrance before construction begins.

How to Install
Rock Size: Use a mix of 1 to 4 inch stone
Depth: 8 inches minimum
Width: 12 feet minimum
Length: 40 feet minimum (or length of driveway, if shorter)
Geotextile: Place filter cloth under entire gravel bed

Maintenance:
Redress with clean stone as required to keep sediment from tracking onto the street.

4. Install Silt Fence

Purpose:
Silt fences intercept runoff and allow suspended sediment to settle out.

Requirements:
Silt fence must be installed:

- on the downhill side of the construction activities
- between any ditch, swale, storm sewer inlet, or waters of the State and the disturbed soil

** Hay bales must not be used as sediment barriers due to their tendency to degrade and fall apart.*

Where to place:

- Place silt fence on the downhill edge of bare soil. At the bottom of slopes, place fence 10 feet downhill from the end of the slope (if space is available).
- Ensure the silt fence catches all runoff from bare soil.
- Maximum drainage area is 1/4 acre for 100 feet of silt fence.
- Install silt fence across the slope (not up and down hills)
- Install multiple rows of silt fence on long hills to break up flow.
- Do not install silt fence across ditches, channels, or streams or in stream buffers.

How to Install silt fence:

- Dig a trench 6 inches deep across the slope
- Unroll silt fence along the trench
- Ensure stakes are on the downhill side of the fence
- Join fencing by rolling the end stakes together
- Drive stakes in against downhill side of trench
- Drive stakes until 16 inches of fabric is in trench
- Push fabric into trench; spread along bottom
- Fill trench with soil and pack down

Maintenance:

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.

5. Divert Upland Runoff

Purpose:
Diversion berms intercept runoff from above the construction site and direct it around the disturbed area. This prevents clean water from becoming muddied with soil from the construction site.

Requirements:

If storm water runs onto your site from upslope areas and your site meets the following two conditions, you must install a diversion berm before disturbing any soil.

- You plan to have one or more acres of soil exposed at any one time (excluding roads).
- Average slope of the disturbed area is 20% or steeper.

How to Install:

- Compact the berm with a shovel or earth-moving equipment.
- Seed and mulch berm or cover with erosion control matting immediately after installation.
- Stabilize the flow channel with seed and straw mulch or erosion control matting. Line the channel with 4 inch stone if the channel slope is greater than 20%.
- Ensure the berm drains to an outlet stabilized with riprap. Ensure that there is no erosion at the outlet.
- The diversion berm shall remain in place until the disturbed areas are completely stabilized.

6. Slow Down Channelized Runoff

Purpose:
Stone check dams reduce erosion in drainage channels by slowing down the storm water flow.

Requirements:

If there is a concentrated flow (e.g. in a ditch or channel) of storm water on your site, then you must install stone check dams. Hay bales must not be used as check dams.

How to Install:

Height: No greater than 2 feet. Center of dam should be 9 inches lower than the side elevation
Side slopes: 2:1 or flatter
Stone size: Use a mixture of 2 to 9 inch stone
Width: Dams should span the width of the channel and extend up the sides of the banks
Spacing: Space the dams so that the bottom (toe) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.
Spacing (in feet) = Height of check dam (in feet)/Slope in channel (ft/ft)

Maintenance:

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam. If significant erosion occurs between check dams, a liner of stone should be installed.

7. Construct Permanent Controls

Purpose:

Permanent storm water treatment practices are constructed to maintain water quality, ensure groundwater flows, and prevent downstream flooding. Practices include detention ponds and wetlands, infiltration basins, and storm water filters.

Requirements:

If the total impervious* area on your site, or within the common plan of development, will be 1 or more acres, you must apply for a State Storm water Discharge Permit and construct permanent storm water treatment practices on your site. These practices must be installed before the construction of any impervious surfaces.

How to comply:

Contact the Vermont Storm water Program and follow the requirements in the Vermont Storm water Management Manual. The Storm water Management Manual is available at: www.vtwaterquality.org/stormwater.htm

*An impervious surface is a manmade surface, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

8. Stabilize Exposed Soil

Purpose:

Seeding and mulching, applying erosion control matting, and hydroseeding are all methods to stabilize exposed soil. Mulches and matting protect the soil surface while grass is establishing.

Requirements:

All areas of disturbance must have temporary or permanent stabilization within 7, 14, or 21 days of initial disturbance, as stated in the project authorization. After this time, any disturbance in the area must be stabilized at the end of each work day.

The following exceptions apply:

- Stabilization is not required if earthwork is to continue in the area within the next 24 hours and there is no precipitation forecast for the next 24 hours.
- Stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation, utility trenches).

All areas of disturbance must have permanent stabilization within 48 hours of reaching final grade.

How to comply:

Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.

Seeding Rates for Temporary Stabilization

April 15 - Sept. 15 - Ryegrass (annual) or perennial: 20 lbs./acre
Sept. 15 - April 15 - Winter rye: 120 lbs./acre

Seeding Rates for Final Stabilization: Choose

Seeding Rates for Final Stabilization:			
Choose from:	Variety	Lbs./acre	Lbs./1000 sq. ft.
Barbed foot trefoil	Elmore/Pardus	51	0.1
or			
Common white clover	Common	8	0.2
plus			
Tall Fescue	KY-31/Rebel	10	0.25
plus			
Redtop	Common	2	
or			
Riverbank (perennial)	Pennine Linn	5	0.1

1 - Mix 2.5 each of Elmore and Pardus OR 2.5 lbs. of Barbed foot and 2.5 lbs. white clover per acre

Mulching Rates

April 15 - Sept. 15 - Hay or Straw: 1 inch deep (1-2 bales/1000 s.f.)
Sept. 15 - April 15 - Hay or Straw: 2 in. deep (2-4 bales/1000 s.f.)

Erosion Control Matting

As per manufacturer's instructions

Hydroseed

As per manufacturer's instructions

9. Winter Stabilization

Purpose:

Managing construction sites to minimize erosion and prevent sediment loading of waters is a year-round challenge. In Vermont, this challenge becomes even greater during the late fall, winter, and early spring months. 'Winter construction' as discussed here, describes the period between October 15 and April 15, when erosion prevention and sediment control is significantly more difficult. Rains in late fall, thaw throughout the winter, and spring melt and rains can produce significant flows over frozen and saturated ground, greatly increasing the potential for erosion.

Requirements for Winter Shutdown:

For those projects that will complete earth disturbance activities prior to the winter period (October 15), the following requirements must be adhered to:

- For areas to be stabilized by vegetation, seeding shall be completed no later than September 15 to ensure adequate growth and cover.
- If seeding is not completed by September 15, additional non-vegetative protection must be used to stabilize the site for the winter period. This includes use of Erosion Control Matting or netting of a heavy mulch layer. Seeding with winter rye is recommended to allow for early germination during wet spring conditions.
- Where mulch is specified, apply roughly 2 inches with an 80-90% cover. Mulch should be tracked in or stabilized with netting in open areas vulnerable to wind.

Requirements for Winter Construction

If construction activities involving earth disturbance continue past October 15 or begin before April 15, the following requirements must be adhered to:

- Enlarged access points, stabilized to provide for snow stockpiling.
- Limits of disturbance moved or replaced to reflect boundary of winter work.
- A snow management plan prepared with adequate storage and control of meltwater, requiring cleared snow to be stored down slope of all areas of disturbance and out of storm water treatment structures.
- A minimum 25 foot buffer shall be maintained from perimeter controls such as silt fence.
- In areas of disturbance that drain to a water body within 100 feet, two rows of silt fence must be installed along the contour.
- Drainage structures must be kept open and free of snow and ice dams.
- Silt fence and other practices requiring earth disturbance must be installed ahead of frozen ground.
- Mulch used for temporary stabilization must be applied at double the standard rate, or a minimum of 3 inches with an 80-90% cover.
- To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:
 - If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
 - Disturbed areas that collect and retain runoff, such as house foundations or open utility trenches.
- Prior to stabilization, snow or ice must be removed to less than 1 inch thickness.
- Use stone to stabilize areas such as the perimeter of buildings under construction or where construction vehicle traffic is anticipated. Stone paths should be 10 to 20 feet wide to accommodate vehicular traffic.

10. Stabilize Soil at Final Grade

Purpose:

Stabilizing the site with seed and mulch or erosion control matting when it reaches final grade is the best way to prevent erosion while construction continues.

Requirements:

Within 48 hours of final grading, the exposed soil must be seeded and mulched or covered with erosion control matting.

How to comply:

Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area. For seeding and mulching rates, follow the specifications under Rule 8, Stabilizing Exposed Soil.

11. Dewatering Activities

Purpose:

Treat water pumped from dewatering activities so that it is clear when leaving the construction site.

Requirements:

Water from dewatering activities that flows off of the construction site must be clear. Water must not be pumped into storm sewers, lakes, or wetlands unless the water is clear.

How to comply:

Using sock filters or sediment filter bags on dewatering discharge hoses or pipes, discharge water into silt fence enclosures installed in vegetated areas away from waterways. Remove accumulated sediment after the water has dispersed and stabilize the area with seed and mulch.

12. Inspect Your Site

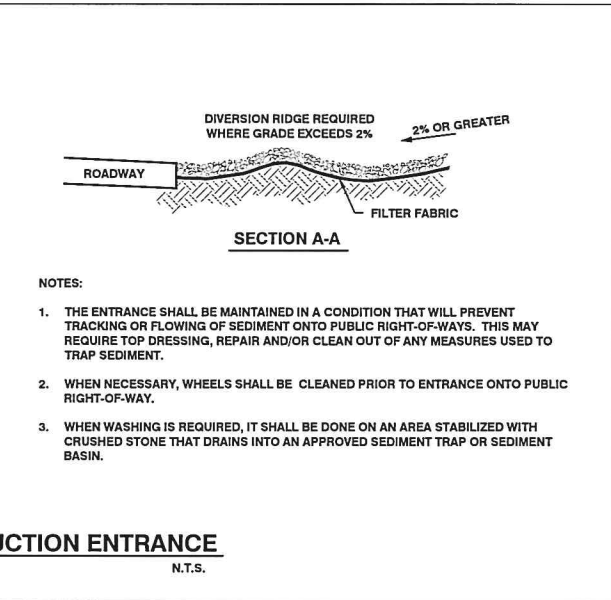
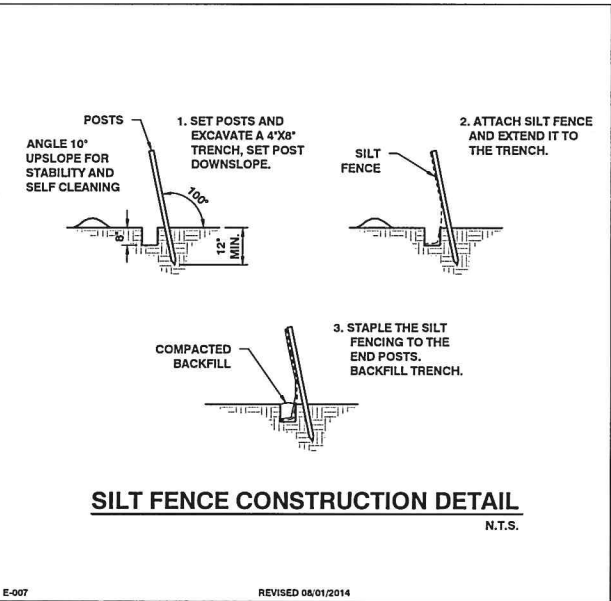
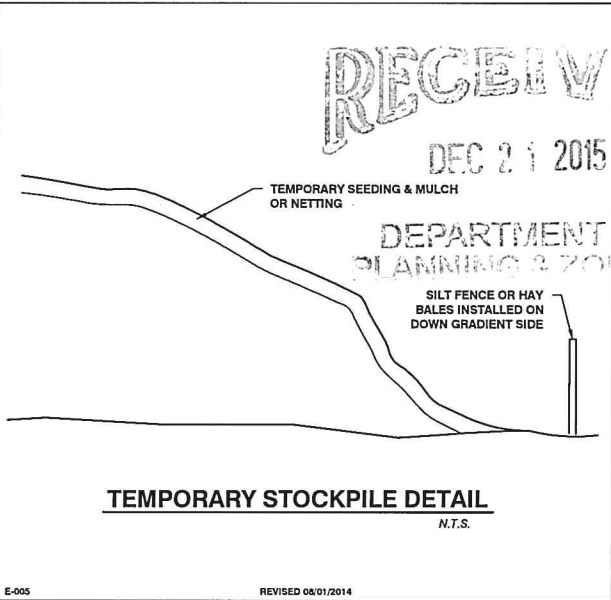
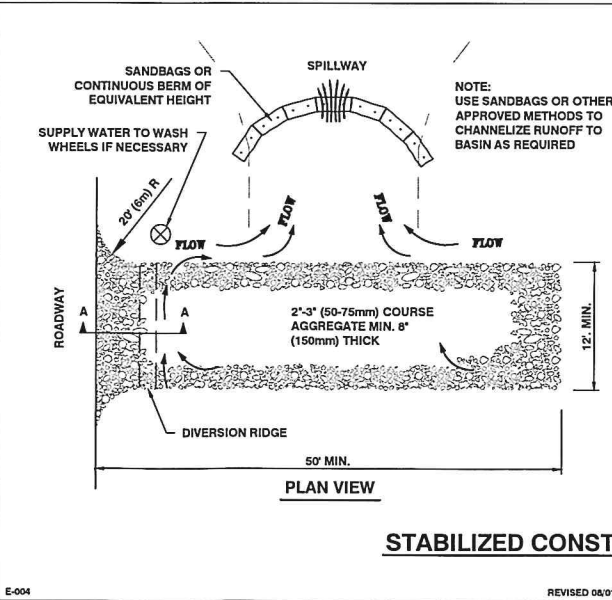
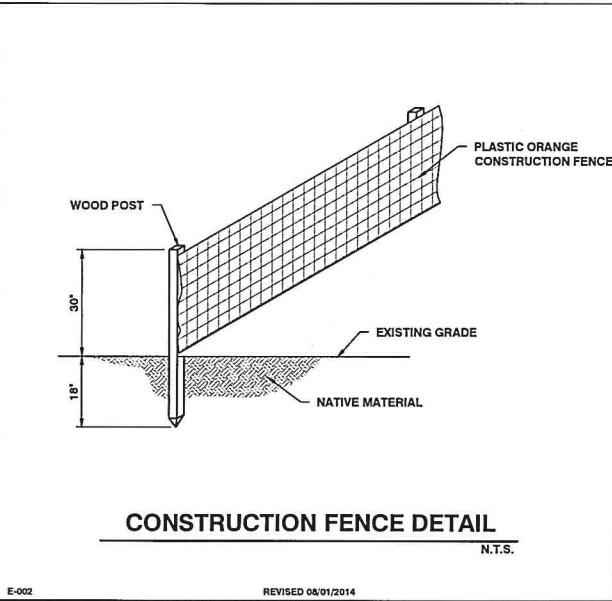
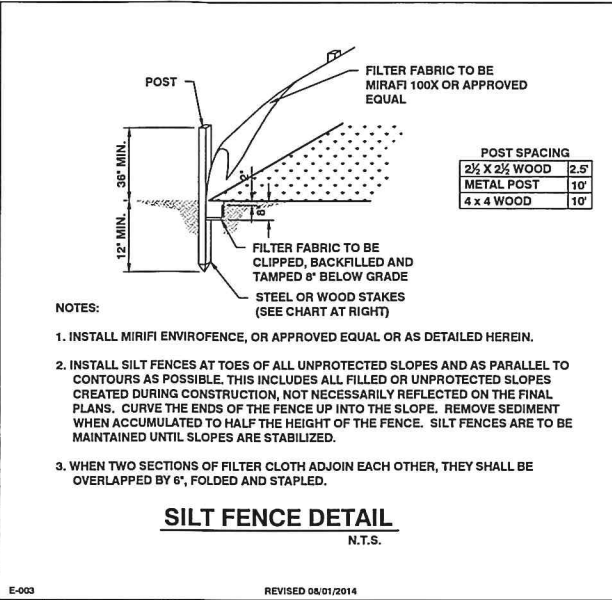
Purpose:

Perform site inspections to ensure that all sediment and erosion control practices are functioning properly. Regular inspections and maintenance of practices will help to reduce costs and protect water quality.

Requirements:

Inspect the site at least once every 7 days and after every rainfall or snow melt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.

In the event of a noticeable sediment discharge from the construction site, you must take immediate action to inspect and maintain existing erosion prevention and sediment control practices. Any visibly discolored storm water runoff to waters of the State must be reported. Forms for reporting discharges are available at: www.vtwaterquality.org/stormwater.htm



SITE ENGINEER:



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10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403
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BUILDING RENOVATION AND SITE IMPROVEMENTS
329, 351 NORTH AVE.
BURLINGTON, VT

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

EROSION CONTROL NOTES and DETAILS

DATE

12/18/2015

SCALE

AS SHOWN

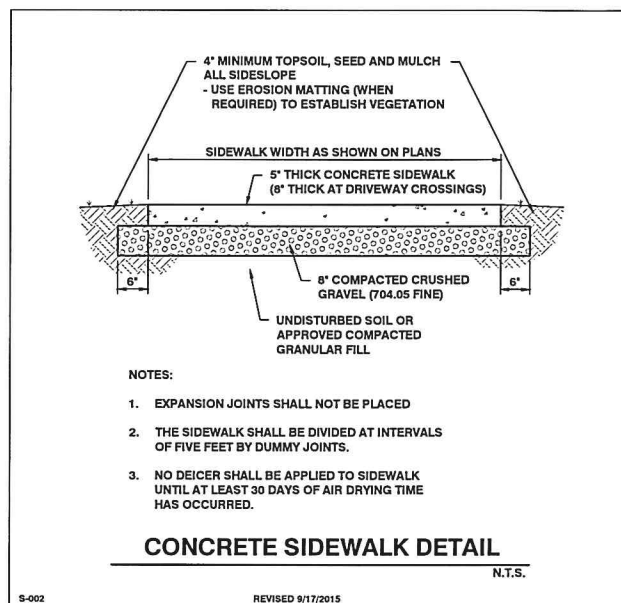
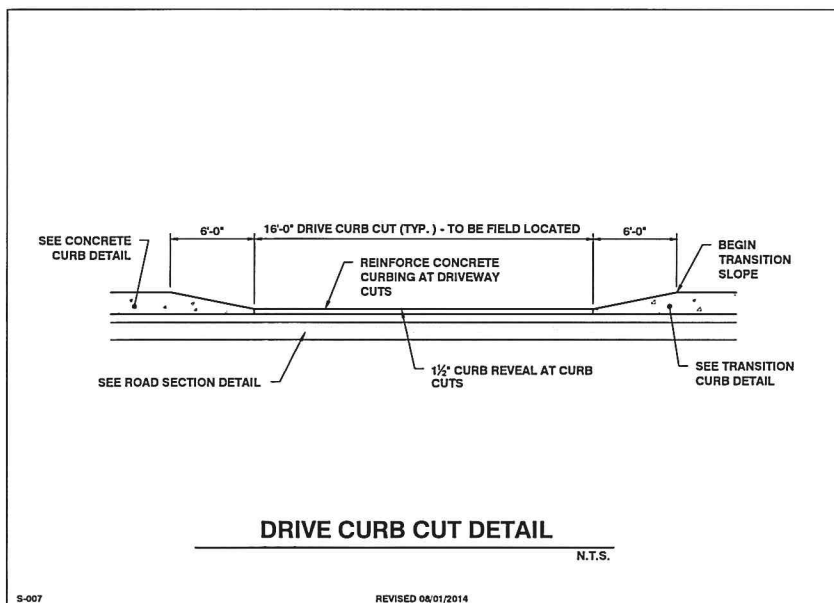
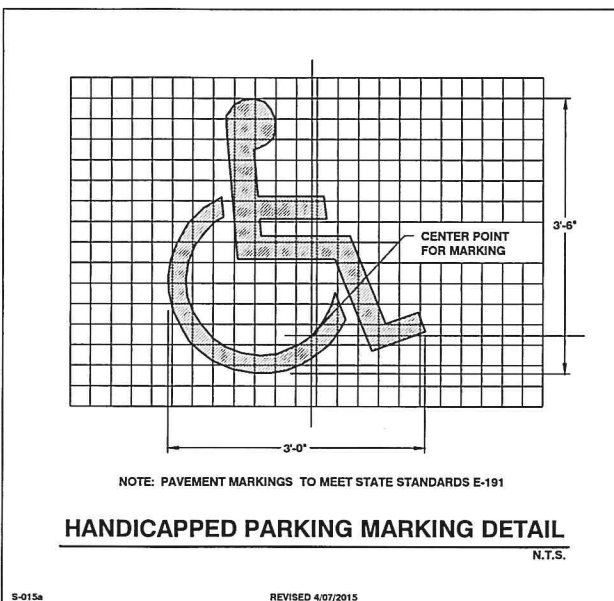
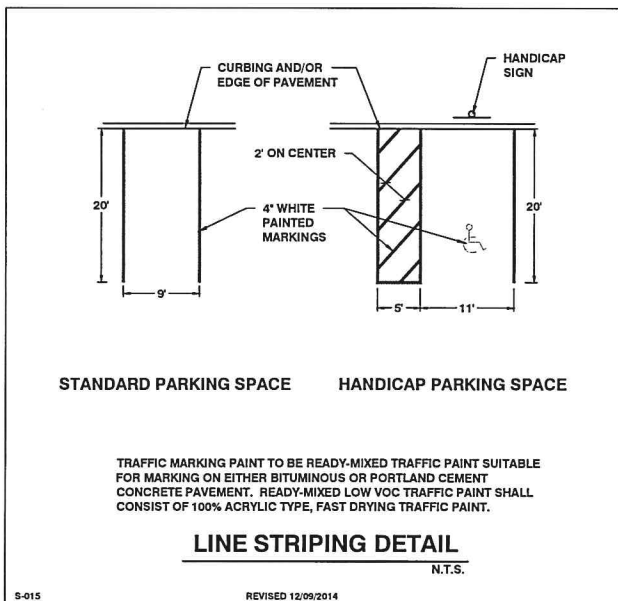
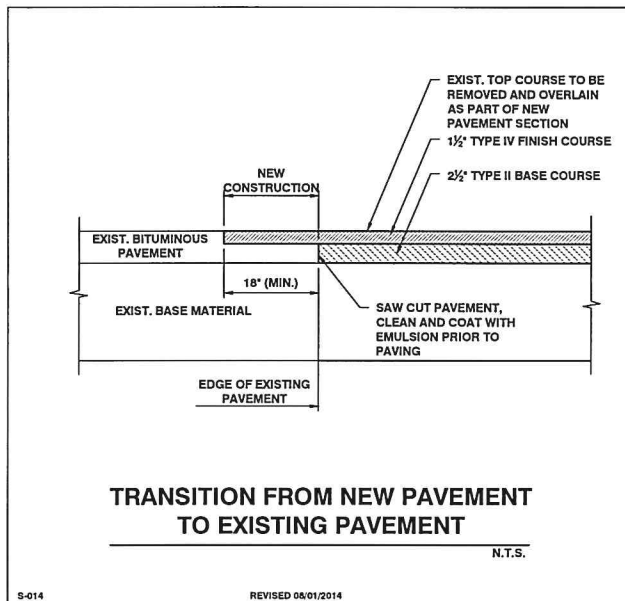
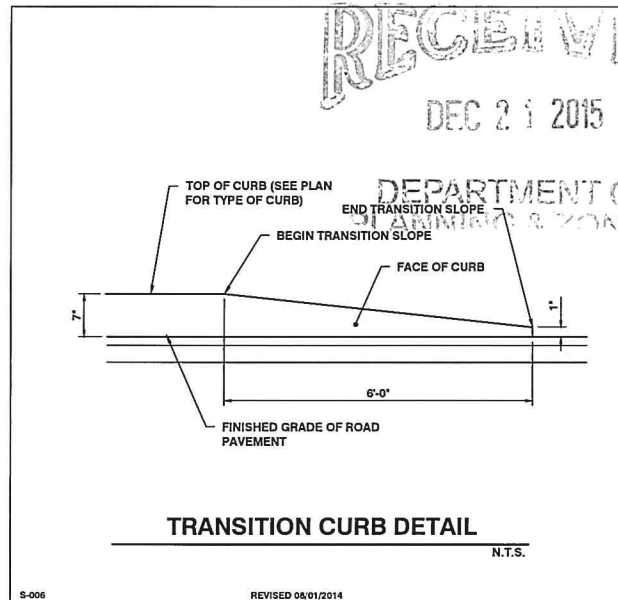
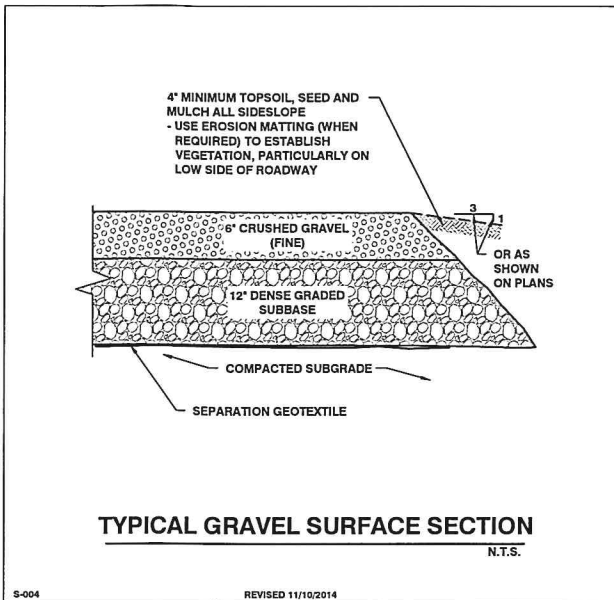
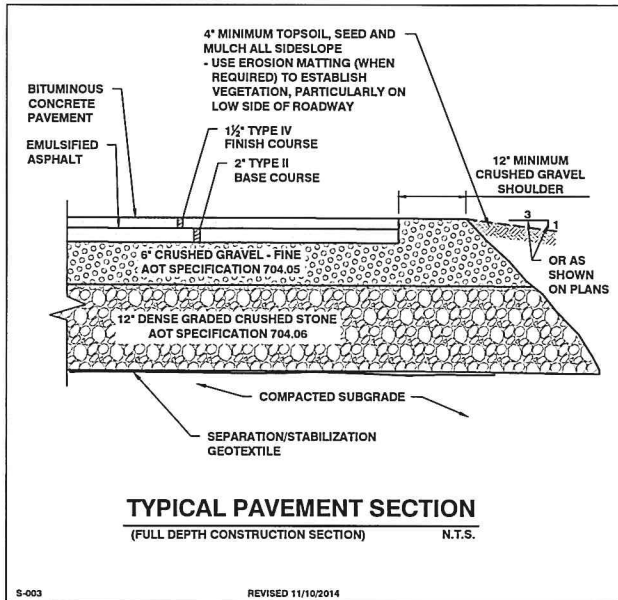
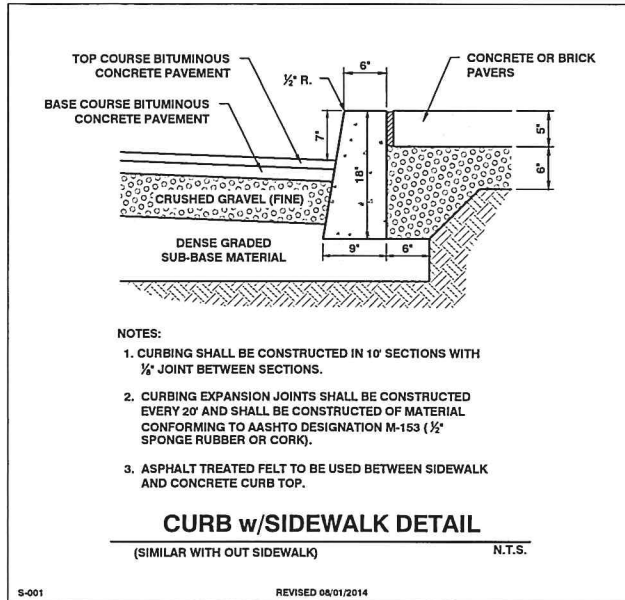
PROJ. NO.

14215

DRAWING NUMBER

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SITE ENGINEER:

CIVIL ENGINEERING ASSOCIATES, INC.
10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403
802-864-2323 FAX: 802-864-2371 web: www.cca-vt.com

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DRAWN: PJM
CHECKED: SAV
APPROVED: SAV

OWNER:

BURLINGTON COLLEGE

351 NORTH AVE
BURLINGTON VERMONT
05401

PROJECT:

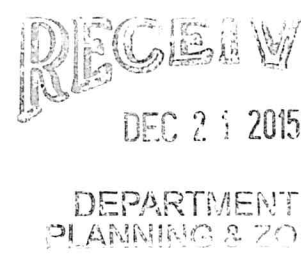
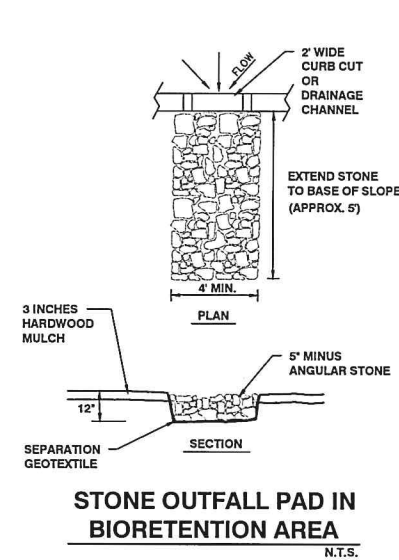
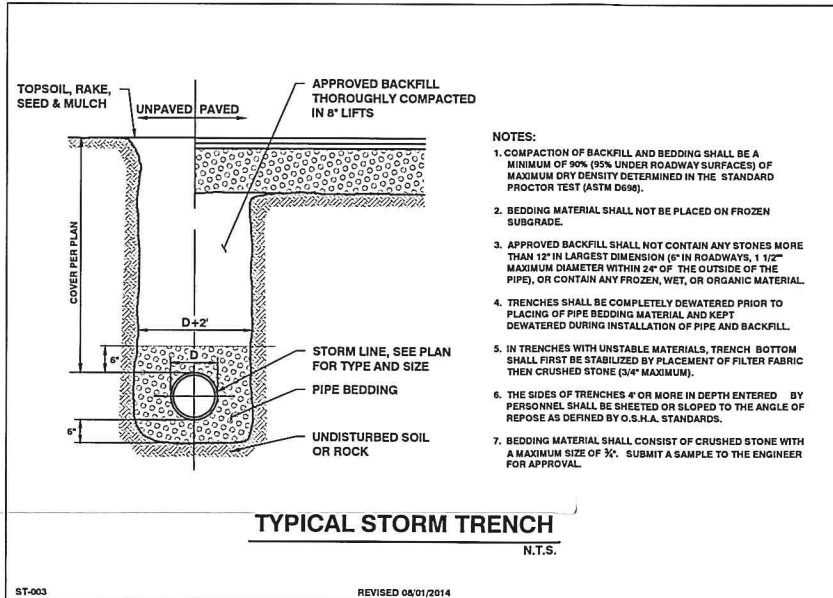
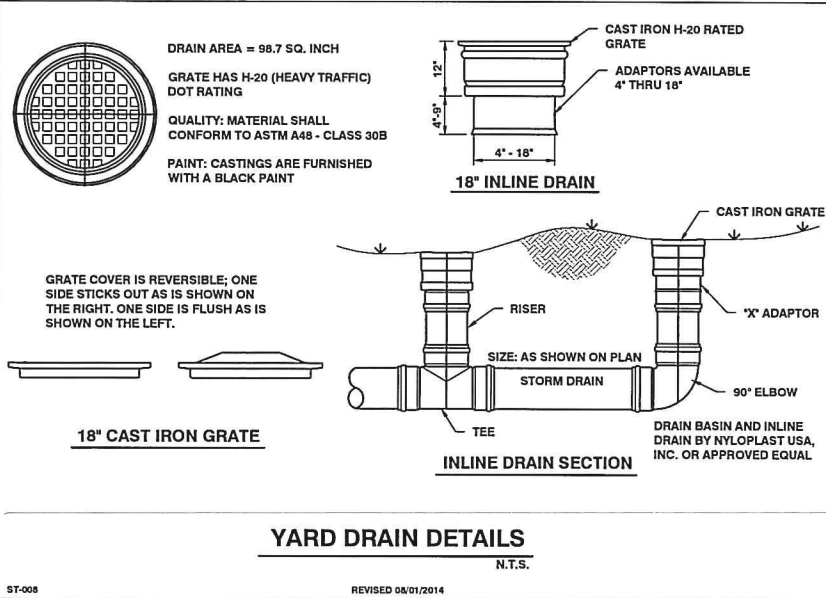
BUILDING RENOVATION AND SITE IMPROVEMENTS
329, 351 NORTH AVE.
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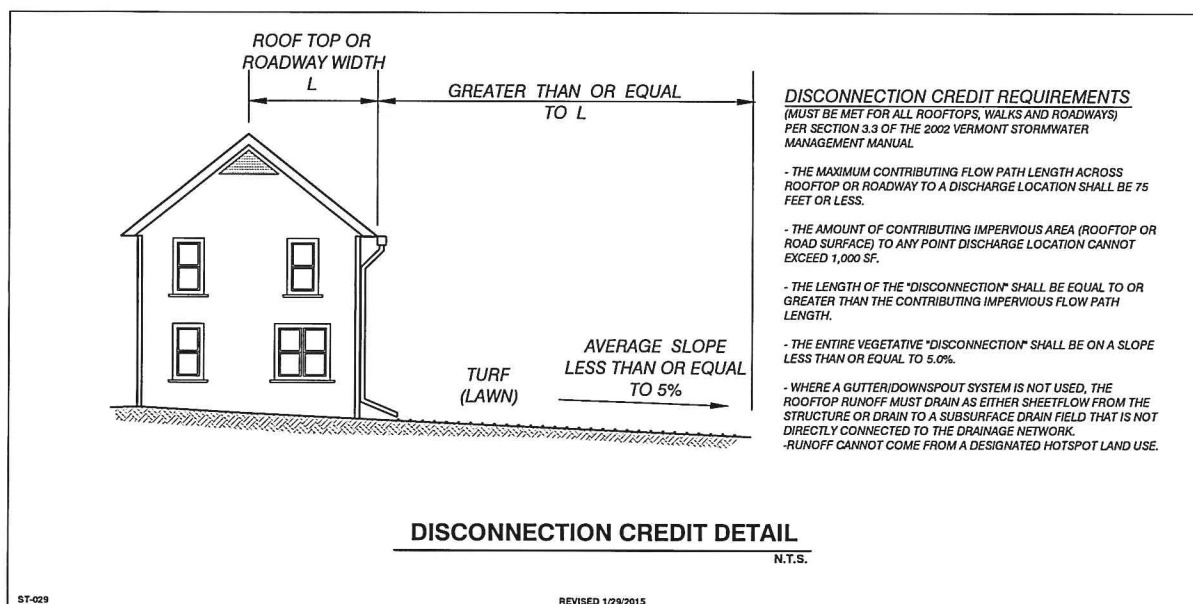
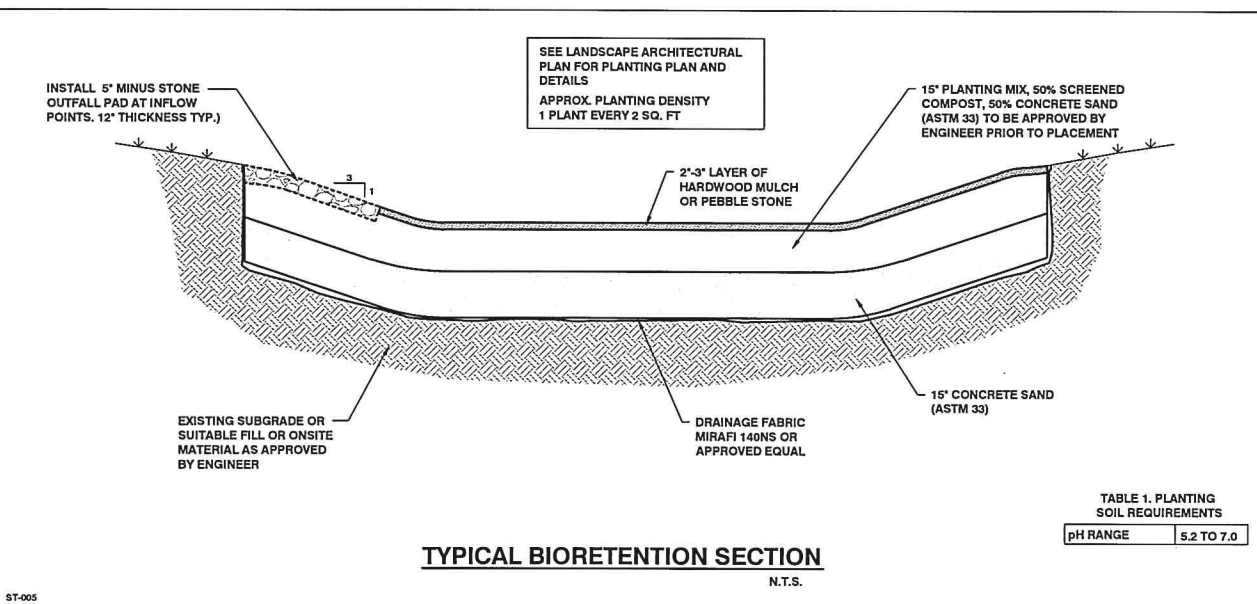
SITE ENGINEER:
CIVIL ENGINEERING ASSOCIATES, INC.
10 MAINFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403
802-864-2223 FAX: 802-864-2271 web: www.cca-vt.com
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PROJECT:
BUILDING RENOVATION AND SITE IMPROVEMENTS
329, 351 NORTH AVE.
BURLINGTON, VT

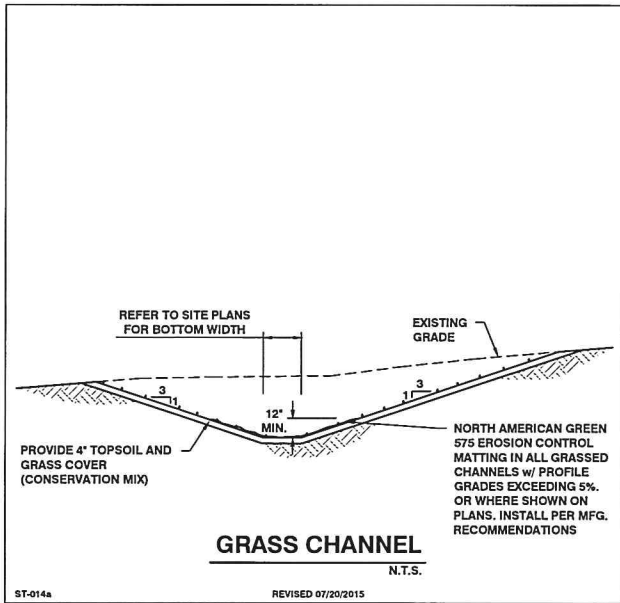


DATE	CHECKED	REVISION
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PROJECT COORDINATION UPDATED 9/14/15

PART 1 – GENERAL

1.01 MEETINGS & PROJECT ACCESS

- A. The Owner shall be notified five (5) days prior to commencement of Work by the Contractor.
- B. The Contractor will coordinate with the Owner to arrange an on-site pre-construction meeting prior to commencement of any work. Job superintendents and subcontractors shall be included in this meeting.
- C. The Contractor will coordinate all phases of the Work, so as not to interfere with the normal work procedures in the area.
- D. The Contractor shall conduct his work in such a manner as to not interfere with or endanger work or traffic in areas adjacent to the construction area, except as permitted by the Owner. The Contractor shall so arrange his construction operations as to provide access for emergency vehicles and equipment to the work site at all times.

1.02 LABOR

- A. The Contractor and subcontractors will employ mechanics skilled in their respective trades.
- B. All labor will be performed in a neat and workmanlike manner.

1.03 PROTECTION OF PERSONS AND PROPERTY

- A. The Contractor shall be responsible for initiating, maintaining, and supervising all O.S.H.A. safety precautions in connection with the Work.
- B. Fire Protection: The Contractor shall take all necessary precautions to prevent fires adjacent to the Work and shall provide adequate facilities for extinguishing fires. The Contractor shall also prevent fires in project related buildings and shall prevent the spread of fires to areas outside the limits of the Work.
- C. Safety Precautions: Prior to commencement of Work, the Contractor shall be familiar with all safety regulations and practices applicable with construction operations. No additional payments will be made for equipment and procedures necessitated by these safety precautions.

1.04 CORRECTION OF WORK

- A. The Contractor shall promptly correct all Work rejected by the Owner as defective or as failing to conform to the Contract Documents. The Contractor shall bear all cost of correcting such rejected Work.

1.05 WEATHER CONDITIONS

- A. No Work shall be done when, in the opinion of the Owner, the weather is unsuitable. No concrete, earth backfill, embankment, or paving shall be placed upon frozen material. If there is delay or interruption in the Work due to weather conditions, the necessary precautions must be taken to bond new Work to old.
- B. Protection Against Water and Storm: The Contractor shall take all precautions to prevent damage to the Work by storms or by water entering the site of the Work directly or through the ground. In case of damage by storm or water, the Contractor, at his own expense, shall make repairs or replacements or rebuild such parts of the Work as the Engineer may require in order that the finished work may be completed as required by the Drawings and Specifications.

1.06 DISPOSAL OF DEBRIS

- A. All debris and excess materials, other than that which is authorized to be reused, become the property of the Contractor and shall be promptly removed from the property. The Contractor shall receive title to all debris and/or excess material. The Owner will not be responsible for any loss or damage to debris or excess material owned by the Contractor.

1.07 PROJECT LAYOUT

- A. The Contractor shall be responsible for providing all necessary survey staking.
1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.
3. Establish a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.
- a. Record locations, with horizontal and vertical data, on Project Record Documents.

1.08 TESTING

- A. The Contractor is responsible for obtaining testing and inspection services.

SITE CLEARING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:

1. Remove surface debris.
2. Clear site of plant life and grass.
3. Remove trees and shrubs.
4. Remove root system of trees and shrubs.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 PROTECTION

- A. Protect utilities that remain from damage.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect bench marks and existing structures from damage or displacement.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- E. Maintain access to the site at all times.

3.02 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove trees and shrubs within marked areas. Remove stumps, roots and top roots and other projections 1½" or greater in diameter to 2'-0" below the excavated surfaces in cut areas and 2'-0" below the exposed subgrade in fill areas.

3.03 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. The Contractor shall coordinate Work with the Engineer and Owner in establishing suitable areas within the property limits for depositing debris, rocks and extracted plant life. The Contractor shall be responsible for backfilling (capping) and grading all waste sites.

3.04 UTILITIES

- A. Coordinate with utility companies and agencies as required.

SITE EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:

1. All excavation (unless covered in other sections of these specifications), removal and stockpile of topsoil, stabilization fabric, and other miscellaneous and appurtenant works.

2. Site filling.

3. Roadway structural sections.

1.02 PROTECTION

- A. Protect bench marks and existing structures.
- B. Protect above or below grade utilities which are to remain.

1.03 SUBMITTALS

- A. Testing laboratory reports indicating that material for backfill meets requirements of this Section.
- B. Field density test reports of site fill in place.
- C. Field density test reports for roadway structural sections in place.
- D. Stabilization Fabric: Submit copies of manufacturer's specifications and installation instructions.

PART 2 – PRODUCTS

2.01 STRUCTURAL FILL – CRUSHED GRAVEL (AOT SPEC. 704.05, FINE)

- A. All materials shall be secured from approved sources. This gravel shall consist of angular and round fragments of hard durable rock of uniform quality throughout, reasonably free from thin elongated pieces, soft or disintegrated stone, dirt, organic or other objectionable matter. This material shall meet the following grading requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
2"	100
1 1/2"	90 – 100
No. 4	30 – 60
No. 100	0 – 12
No. 200	0 – 6

2.02 CRUSHED GRAVEL (AOT SPEC. 704.05, COARSE)

- A. This material shall meet the following grading requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
4"	95 – 100
No. 4	25 – 50
No. 100	0 – 12
No. 200	0 – 6

At least 50% by mass (weight) of the material coarser than the No. 4 sieve shall have at least one fractured face.

2.03 COMPACTED FILL/GRANULAR BORROW

- A. This material shall be free of shale, clay, friable material, debris, and organic matter, graded in accordance with ANSI/ASTM C136 within the following limits:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
3"	100
¾"	75 – 100
No. 4	20 – 100
No. 100	0 – 20
No. 200	0 – 6

2.04 DRAINAGE COURSE (AOT SPEC. 704.16)

- A. Rock for drainage applications shall be produced from natural gravels or crushed quarried rock and shall consist of clean, hard, sound, and durable material. It shall be obtained from approved sources and shall meet the following grading

requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1"	100
¾"	90 – 100
¾"	20 – 55
No. 4	0 – 10
No. 8	0 – 10

2.5. DENSE GRADED CRUSHED STONE

- A. Dense Graded Crushed Stone should consist of a well graded crushed run stone and should meet the requirements for Vermont AOT Standard Specifications Item 704.05 Dense Graded Crushed Stone for Subbase and the gradation requirements shown in Table 704.06A of the Vermont AOT Standard Specifications.

Sieve Designation	Percent by Weight
3/8"	100
3/4"	90 – 100
2"	75 – 100
1"	50 – 80
½"	30 – 60
No. 4	15 – 40
No. 200	0 – 6

2.1. RECYCLED ASPHALT PAVEMENT (RAP) 1½" MINUS CRUSHED ASPHALT

- A. This material shall be free of Portland Cement and approved by the engineer prior to installation. This material shall not be mixed with gravel and shall meet the following grading requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
2"	100
1½"	90 – 100
No. 4	30 – 60
No. 100	0 – 12
No. 200	0 – 6

2.07 GEOTEXTILE

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 3; AASHTO M 288.
2. Grab Tensile Strength: 157 lbf; ASTM D 4632.
3. Sewn Seam Strength: 142 lbf; ASTM D 4632.
4. Tear Strength: 56 lbf; ASTM D 4533.
5. Puncture Strength: 56 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 70 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.5 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 3; AASHTO M 288.
2. Grab Tensile Strength: 200 lbf; ASTM D 4632.
3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
4. Tear Strength: 75 lbf; ASTM D 4533.
5. Puncture Strength: 90 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
9. Weight: 4.0 oz/yd² minimum.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known below grade utilities. Stake and flag locations.
- C. Maintain and protect existing utilities remaining which pass through work area.
- D. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Engineer.

3.02 EROSION CONTROL

- A. Erosion control must be installed prior to beginning any earthwork operations.

3.03 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be excavated, re-landscaped or regraded and stockpile in areas designated on site or as directed by the Engineer.
- B. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.

1. Maintain stockpile free from debris and trash.

2. Keep the topsoil damp to prevent dust and drying out.

3.04 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be regraded in accordance with plans.
- B. Excavate subsoil required to accommodate site structures, construction operations, roads, and parking areas.
- C. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- D. Notify engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- E. Correct areas over-excavated by error as directed by the Engineer.

3.05 DITCHES

- A. Cut accurately to the cross-sections, grades, and elevations shown.
- B. Maintain excavations free from detrimental quantities of leaves, sticks, trash, and other debris until completion of the work.
- C. Dispose of excavated materials as shown on the drawings or directed by the Engineer; except do not, in any case, deposit materials less than three feet from the edge of a ditch.

3.06 ROADWAY EMBANKMENTS AND BERMS

- A. When embankments are to be made on a hillside, the slope of the original ground on which the embankments are to be constructed shall be stepped and properly drained as the fill is constructed so that adverse movements of the slopes do not occur.
- B. Any excavated rock, ledge, boulders, and stone, except where required in the construction of other items or otherwise directed, shall be used in the construction of embankments to the extent of the project requirements and generally shall be placed so as to form the base of an embankment.
- C. Frozen material shall not be used in the construction of embankments, nor shall the embankments or successive layers of the embankments be placed upon frozen material. Placement of material other than rock shall stop when the sustained air temperature, below 32 degrees Fahrenheit, prohibits the obtaining of the required compaction. If the material is otherwise acceptable, it shall be stockpiled and reserved for future use when its condition is acceptable for use in embankments.
- D. When an embankment is to be constructed across a swamp, muck, or areas of unstable soils, the unsuitable material shall be excavated to reach soils of adequate bearing capacity and the embankment begun. Alternative methods, such as use of a stabilization fabric in place of excavation and backfill, may be utilized only after approval of some by the Engineer.
- E. Material being placed in embankments shall be placed in horizontal layers of uniform thickness across the full width of the embankment. Stumps, trees, rubbish, and other unsuitable material shall not be placed in embankments.
- F. Embankment areas shall be placed in eight-inch maximum lifts. Effective spreading equipment shall be used on each layer to obtain uniform thickness prior to compaction. Each layer shall be kept crowned to shed water to the outside edge of embankment and continuous leveling and manipulating will be required to assure uniform density. The entire area of each layer shall be uniformly compacted to at least the required minimum density by use of compaction equipment consisting of rollers, compactors, or a combination thereof. Earth-moving and other equipment not specifically manufactured for compaction purposes will not be considered as compaction equipment.
- G. All fill material shall be compacted at a moisture content suitable for obtaining the required density. In no case shall the moisture content in each layer under construction be more than three percent above the optimum moisture content and shall be less than that quantity that will cause the embankment to become unstable during compaction. Sponginess, shoving, or other displacement under heavy equipment shall be considered evidence for an engineering determination of lack of stability under this requirement, and further placement of material in the area affected shall be stopped or retarded to allow the material to stabilize.
- H. When the moisture content of the material in the layer under construction is less than the amount necessary to obtain satisfactory compaction by mechanical compaction methods, water shall be added by pressure distributors or other approved equipment. Water may also be added in excavation or borrow pits. The water shall be uniformly and thoroughly incorporated into the soil by disc, harrowing, blading, or by other approved methods. This manipulation may be omitted for sands and gravel. When the moisture content of the material is in excess of three percent above optimum moisture content, dry material shall be thoroughly incorporated into the wet material, or the wet material shall be aerated by disk, harrowing, blading, rotary mixing, or by other approved methods; or compaction of the layer of wet material shall be deferred until the layer has dried to the required moisture content by evaporation.

3.07 COMPACTION REQUIREMENTS

- A. All backfills and fills shall be compacted in even lifts (12" maximum) to attain the required densities as follows:
- | Location | Modified Proctor
ASTM D-1557 |
|---|---------------------------------|
| Subgrade (8") and Gravel for Roads and Parking Lots | 95% |
| General Embankments | 90% |
- UTILITY TRENCHING AND BACKFILLING
- PART 1 – GENERAL
- 1.01 SUMMARY
- A. Section includes:

1. Trench, backfill, and compact as specified herein and as needed for installation of underground utilities.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- C. Comply with all requirements of governmental agencies having jurisdiction.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

- A. Fill and backfill materials:
1. Provide backfill materials free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension.
2. Fill material is subject to the approval of the Engineer, and is that material removed from excavations or imported from off-site borrow areas, predominantly granular, non-expansive soil free from roots and other deleterious matter.
3. Do not permit rocks having a dimension greater than 2" within 2' of the outside of pipe.
4. Cohesionless material used for backfill: Provide sand free from organic material and other foreign matter, and as approved by the Engineer.

PART 3 – EXECUTION

3.01 PROCEDURES

- A. Existing Utilities:

1. Unless shown to be removed, protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to trenching. If damaged, repair or replace at no additional cost to the Owner.
2. When existing underground utilities, which are not scheduled for removal or abandonment, are encountered in the excavation, they shall be adequately supported and protected from damage. Any damage to utilities shall be repaired promptly at no additional cost to the Owner.
3. If the service is interrupted as a result of work under this section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this section, immediately notify the Engineer and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.
- B. Protection of persons and property:
1. Barricade open holes and depressions occurring as part of the work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this section.

- C. Dewatering: The Contractor, at all times, shall conduct his operations so as to prevent the accumulation of water, ice, and snow in excavations or in the vicinity of excavated areas, and to prevent water from interfering with the progress of quality of the work. Under no conditions shall water be allowed to rise in open trenches after pipe has been placed.
- D. Accumulated water, ice, and snow shall be promptly removed and disposed of by pumping or other approved means. Disposal shall be carried out in a manner which will not create a hazard to public health, nor cause injury to public or private property, work completed or in progress, or public streets, nor cause any interference in the use of streets and road by the public. Pipes under construction shall not be used for drainage of excavations.

- E. Maintain access to adjacent areas at all time.

3.02 TRENCHING

- A. Care shall be exercised by the Contractor to avoid disrupting the operation of existing facilities without prior written approval of the Engineer.
- B. Provide sheeting and shoring necessary for protection of the work and for the safety of personnel.
1. Sheeting and bracing required for trenches shall be removed to the elevation of the pipe, but no sheeting will be allowed to be pulled, removed, or disturbed below the pipe.
- C. A trench shall be excavated to the required depth and to a width sufficient to allow for joining of the pipe and compaction of the bedding and backfill material under and around the pipe. Where feasible, trench walls shall be vertical.
- D. The completed trench bottom shall be firm for its full length and width.
- E. If indicated on the plans or directed by the Engineer, poor foundation material encountered below the normal grade of the pipe bed shall be removed and replaced with granular backfill.
- F. Where pipes are to be placed in embankment fill, the excavation shall be made after the embankment has been

SITE ENGINEER:



CIVIL ENGINEERING ASSOCIATES, INC.
10 MAINSFIELD VEWLANE, SOUTH BURLINGTON, VT 05403
802-864-2222 FAX: 802-864-2271 web: www.cca-vt.com

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OWNER:

BURLINGTON
COLLEGE

351 NORTH AVE
BURLINGTON VERMONT
05401

PROJECT:

BUILDING
RENOVATION AND
SITE
IMPROVEMENTS
329, 351 NORTH
AVE.

BURLINGTON, VT



LOCATION MAP

1" = 200'

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

SITE
SPECIFICATIONS

DATE	DRAWING NUMBER
12/18/2015	C5.0
SCALE NONE	PROJ. NO. 14215

completed to a height of 3 feet plus the diameter of the pipe above the designed grade of the pipe.

G. Excavating for appurtenances:

1. Excavate for manholes and similar structures to a distance sufficient to leave at least 12" clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks.

2. Over-depth excavation beyond such appurtenances that has not been directed will be considered unauthorized. Fill with sand, gravel, or lean concrete as directed by the Engineer, and at no additional cost to the Owner.

- H. Excavation shall not interfere with normal 45° bearing splay of foundations.
- I. All trenching shall be in accordance with the latest OSHA requirements.
- J. Where utility runs traverse public property or are subject to governmental or utility company jurisdiction, provide depth, bedding, cover, and other requirements as set forth by legally constituted authority having jurisdiction, but in no case less than the depth shown in the Contract Documents.
- K. Where trenching occurs in existing lawns, remove turf in sections and keep damp. Replace turf upon completion of the backfilling.

3.03 BEDDING

A. Pipe Bedding Area: Prior to laying pipe, bedding material shall be placed to the limits of the excavation and to a depth beneath the pipe as specified. This material shall be either sand, gravel, or crushed stone and shall not contain large lumps and stones over one inch in diameter. As the pipe is laid, bedding material shall be extended to 6" above the pipe and leveled along the width of the trench.

- 3.04 BACKFILLING
- A. Backfilling shall not be done in freezing weather, with frozen materials, or when materials already placed are frozen.
- B. Unless otherwise specified or indicated on the plans, material used for backfilling trenches above the bedding area shall be suitable material which was removed during excavation or obtained from borrow and when compacted shall make a dense stable fill. The material shall not contain vegetation, porous matter, masses of roots, individual roots more than 18 inches long or ½ inch thick, or stones greater than 50 pounds or larger than six inches in the widest dimension.
- C. If additional material is required, it shall be furnished from approved sources.
- D. Backfill material shall be evenly spread and compacted in lifts not more than 12 inches thick or as approved by the Engineer. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction.
- E. Reopen trenches which have been improperly backfilled, to a depth as required for proper compaction. Refill and compact as specified, or otherwise correct to the approval of the Engineer.
- F. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work and, after approvals have been made, refill and compact as specified, all at no additional cost to the Owner.
- G. Take special care in backfilling and bedding operations to not damage pipe and pipe coatings.
- H. No compacting shall be done when the material is too wet to be compacted properly. At such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction, or such other precautions are taken as may be necessary to obtain proper compaction.

I. Backfill material shall be compacted to the following percentages of maximum dry density and the in-place moisture content shall not be more than 2% above the optimum moisture content, as determined by Modified Proctor ASTM D1557.

1. Around all structures, under roadway paving, shoulder and embankments – 95%.
2. All other areas – 90%.

BITUMINOUS CONCRETE PAVING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
- Base Courses
 - Leveling Courses
 - Finish Course

B. General: This work shall consist of one or more courses of bituminous mixture, constructed on a prepared foundation in accordance with these Specifications and the type of surface being placed, and in conformity with the lines, grades, thicknesses and typical cross sections shown on the plans or established by the Engineer.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials and installation shall be in accordance with The Asphalt Institute Manual (MS-4) and the VAOT Standard Specifications, (Latest Edition).
- C. Mixing Plant: Conform to State of Vermont Standards.

D. Obtain materials from same source throughout.

1.03 PROJECT CONDITIONS

- A. Bituminous concrete shall not be placed between November 1 and May 1. Material shall not be placed when the granular subbase is wet or when the air temperature at the paving site in the shade and away from artificial heat is as follows:
- | Air Temperature
Degrees Fahrenheit | Pavement
Compacted Depth |
|---------------------------------------|-----------------------------|
| 40 Degrees or below | 1 1/4" or Greater |
| 50 Degrees or below | Less than 1 1/4" |

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Materials shall be combined and graded to meet the criteria as defined in the VAOT Standard Specifications, Division 700 for bituminous concrete.
- B. Gradation: Materials shall be combined and graded to meet composition limits specified in VAOT Standard Specification, Section 406.03, for the base course and finish course. Unless specifically shown on the Plans, all
- Bituminous concrete pavement shall be designed in conformance with the design criteria for heavy duty bituminous concrete pavement. (75 blows/side)
 - All Asphalt Cement used in the bituminous concrete pavement shall be PG 58-28 (or VTrans approved mix) unless otherwise noted.
- C. Thickness of paving for drives and parking lots shall be as shown on the plans, consisting of base course and finish course.
- D. For pavement reconstruction areas due to trenching, the depth of each course shall be increased by 1/2". Pavement reconstruction caused by trench reopening due to improper placement or non-approved placement shall be performed at no additional cost to the Owner.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install in accordance with VAOT Standard Specifications, Section 406.

3.02 EXAMINATION

- A. Verify that compacted granular base is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.03 PREPARATION

- A. Matching Surfaces: When a new pavement is to match an existing bituminous pavement for a roadway or trench, the Contractor shall vertically smooth cut the existing pavement, over the existing gravel base. The smooth cut shall be thoroughly cleaned and coated with Emulsified Asphalt, RS-1, just prior to paving.

3.04 PREPARATION – TACK COAT

- A. When the bottom course of bituminous concrete pavement is left over the winter, or paving is to be made over an existing bituminous concrete pavement, the existing surface shall be cleaned and Emulsified Asphalt applied before the next course is applied.
- B. Also apply to contact surfaces of curbs.
- C. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.05 PLACING ASPHALT PAVEMENT

- A. Place to compacted thickness identified on the plans.
- B. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- C. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.06 JOINTS

- A. Joints between old and new pavements or between successive day's work shall be made so as to insure a thorough and continuous bond between the old and new mixtures. Whenever the spreading process is interrupted long enough for the mixture to attain its initial stability, the paver shall be removed from the mat and a joint constructed.
- B. Butt joints shall be formed by cutting the pavement in a vertical plane at right angles to the centerline where the pavement has a true surface as determined by the use of a straight-edge. The butt joint shall be thoroughly coated with Emulsified Asphalt, Type RS-1, just prior to depositing the paving mixtures.
- C. Longitudinal joints that have become cold shall be coated with Emulsified Asphalt, Type RS-1, before the adjacent mat is placed. If they have been exposed to traffic, they shall be cut back to a clean vertical edge prior to painting with the emulsion.
- D. Unless otherwise directed, longitudinal joints shall be offset at least 6" from any joint in the lower courses of pavement. Transverse joints shall not be constructed nearer than one foot from the transverse joints constructed in lower courses.

3.07 TOLERANCES

- A. The surface will be tested by the Engineer using a 16 foot straight-edge at selected points along the entire length of the centerline. Any variations exceeding 3/16 of an inch between any two contacts shall be satisfactorily eliminated. A 10 foot straight-edge may be used on a vertical curve. The straight-edges shall be provided by the Contractor.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/2 inch.

3.08 FIELD QUALITY CONTROL

- A. Permit no vehicular traffic on surfaces until thoroughly cool and hard.

3.09 REPAIR OF SUBSIDENCE

- A. Settlement – Should any pavement settle within one year of completion of the Contract, such pavement shall be repaired at the Contractor's expense. If the Contractor fails to make such repairs promptly upon receipt of notice to do so from the Owner, then the Owner may make such repairs as necessary and the Contractor shall pay the Owner for all costs incurred in making such repairs.

DRAINAGE

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
- Culvert pipe and appurtenances.
 - Stone fill.
 - Drainage Structures

1.02 REFERENCES

- A. Vermont Agency of Transportation Standard Specifications, Latest Edition.

1.03 SUBMITTALS

- A. Manufacturer's technical data for:
- Pipe and appurtenances.
 - Structures.

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Furnish ells, tees, reducing tees, wyes, couplings, increasers, crosses, transitions and end caps of the same type and class of material as the conduit, or of material having equal or superior physical and chemical properties as acceptable to the Engineer.

- B. All culverts and storm drains shall meet the requirements of Section 601 of the Standard Specifications.

2.02 DRAINAGE PIPE & PERFORATED PIPE

- A. Culvert / Drainage Pipe

- Corrugated Polyethylene pipe and fittings (smooth interior) meeting the requirements of AASHTO M-294 and M-252
- for drainage piping installed by directional boring techniques, use PE 3408 high density polyethylene pipe meeting ASTM D3350 Standard (SDR 11 or better)

2.03 CONCRETE STRUCTURES

- A. ASTM C478, sized as indicated.

2.04 METAL ACCESSORIES

- A. Manhole frames and covers:

- Grey cast iron, ASTM A48, as shown on plans.

2.05 STONE FILL

- A. Stone for stone fill shall be approved, hard, blasted angular rock other than serpentine rock containing the fibrous variety chrysotile (asbestos). The least dimension of the stone shall be greater than 1/3 of the longest dimension. The stone fill shall be reasonably well graded from the smallest to the maximum size stone specified so as to form a compact mass when in place.

- Type I – The longest dimension of the stone shall vary from 1 inch to 12 inches, and at least 50 percent of the volume of the stone in place shall have a dimension of 4 inches.
- Type II – The longest dimension of the stone shall vary from 2 inches to 36 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 12 inches.
- Type III – The longest dimension of the stone shall vary from 3 inches to 48 inches and at least 50 percent of the volume of the stone in place shall have a least dimension of 16 inches.
- Type IV – The longest dimension of the stone shall vary from 3 inches to 60 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 20 inches.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which storm sewer system work is to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 GENERAL

- A. When existing underground utilities, which are not scheduled for removal or abandonment, are encountered in the excavation, they shall be adequately supported and protected from damage. Any damage to utilities shall be repaired promptly at no additional cost to the Owner.

3.03 PREPARATION

- A. Hand trim excavation (where necessary) to required elevations. Correct over-excavations with fill material.

- B. The slopes shall be graded to match the grade as shown on the plans. Where required, end sections shall be placed and backfilled to prevent undermining.

- C. Remove large stones or other hard matter which could damage drainage structures or impede consistent backfilling or compaction.

3.04 INSTALLATION OF PIPE

- A. All pipe and fittings shall be carefully examined for defects and no pipe or fittings shall be laid which are known to be defective. If any defective piece is discovered after laying, it shall be removed and replaced at the Contractor's expense. All pipes and fittings shall be cleaned before they are laid and shall be kept clean until accepted in the completed work.

- B. The pipe shall be laid to conform to the lines and grades indicated on the drawings or given by the Engineer. Each pipe shall be laid as to form a close joint with the next adjoining pipe and to bring the inverts continuously to the required grade.

- C. Unless otherwise permitted by the Engineer, the Contractor shall provide for the temporary diversion of water to permit the installation of the pipe in a reasonably dry trench.

- D. Where the pipe is to be laid below the existing ground line, a trench shall be excavated to the required depth and to a width sufficient to allow for joining of the pipe and compaction of the bedding and backfill material under and around the pipe.

- E. The completed trench bottom shall be firm for its full length and width.

- F. If indicated on the plans or directed by the Engineer, unsuitable foundation material encountered below the normal grade of the pipe bed shall be removed and replaced with Granular Backfill, or other specified or approved material.

- G. The Contractor shall take all necessary precautions to prevent flotation of the pipe in the trench.

- H. When pipe laying is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe is eliminated.

3.05 MANHOLES

- A. Precast concrete structures:

- Place precast concrete structures and covers as shown on the Drawings.
- Where manholes occur in pavement, set tops of frames and covers flush with finish surface.
- Provide rubber joint gasket complying with ASTM C443.

CURBS AND WALKS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
- Concrete Curbs
 - Concrete Sidewalks

PART 2 – PRODUCTS

2.01 CONCRETE

- A. The concrete shall have a minimum compressive strength of 4,000 psi at 28 days and shall conform to the requirements of Cast-in-Place Concrete.

2.02 ADMIXTURES

- A. Air-entraining admixture shall meet or exceed ASTM C260. Air content shall range from minimum of 5% to 7%.

2.03 EXPANSION JOINT MATERIAL

- A. Expansion joint material shall be premolded bituminous filler conforming to ASTM D994.

PART 3 – EXECUTION

3.01 CONCRETE CURBS

- A. Excavation shall be made to the required depth and the base material upon which the curb is to be set shall be compacted to a firm, even surface. All soft and unsuitable material shall be removed and replaced with suitable material which shall be thoroughly compacted.

- B. Installation: The curb shall be set so that the front top line is in close conformity to the line and grade required. All space under the curbing shall be filled and thoroughly tamped with material meeting the requirements of the material for the bed course.

- C. Concrete Mixing and Placing: Compaction of concrete placed in the forms shall be by spading or other approved methods. Forms shall be left in place for 24 hours or until the concrete has set sufficiently so that they can be removed without injury to the curbing. Upon removal of the forms, the curb shall be immediately rubbed down to a smooth and uniform surface but no plastering will be permitted. For this work, competent and skillful finishers shall be employed.

- D. Sections: Curbing shall be constructed in sections having a uniform length of ten feet, unless otherwise ordered. Sections shall be separated by open joints 1/8 inch wide except at expansion joints.

- E. Expansion Joints: Expansion joints shall be formed at the intervals shown on the plans using a pre-formed expansion joint filler having a thickness of 1/4 inch cut to conform to the cross-section of the curb. They shall be constructed at 20 foot intervals or as directed by the Engineer. When

the curb is constructed adjacent to or on concrete pavement, expansion joints shall be located opposite or at expansion joints in the pavement.

- F. Backfilling: After the concrete has set sufficiently, the spaces in front and back of the curb shall be filled to the required elevation with layers of not more than six inches of the same material as the bedding and thoroughly tamped.

- G. The Contractor shall protect the curb and keep it in alignment until the completion of the contract. Each curb which is damaged at any time previous to final acceptance of the work shall be removed and replaced with satisfactory curb at the Contractor's expense.

- H. Anti-spalling compound: When the initial curbing period is over (approximately 28 days after placement), all exposed surfaces shall receive two (2) coats of anti-spalling compound. The surfaces shall be cleaned, and then the compound shall be applied; the first coat at a rate of .025 gallons per square yard, and the second at a rate of .015 gallons per square yard. Anti-spalling compound shall only be applied when the air temperature is above 50 degrees Fahrenheit.

3.02 GRANITE CURBING

- A. Sloped granite curbing shall be hard, durable, reasonably uniform in appearance and free from weakening seams. Surfaces shall be as follows:

- Top: 6" wide, sawn true plane.

- Front Face: Smooth quarry split, right angle top (No drill holes showing in top 10")

- Back Face Exposed: Plane parallel with front face, straight split to 1 1/2" below surface.

- End Face Exposed: Square planes on top and face.

- Joints Exposed: Maximum 1" and pointed with mortar. Exposed faces shall be finished with a jointer. Remove all excess mortar from exposed faces.

- Length: Minimum length 3'.

Provide curved curbing to conform to radii indicated on the Contract Plans.

3.03 CONCRETE SIDEWALKS

- A. Excavation and Foundation: Excavation shall be made to the required depth and to a width that will permit placing of bed course material and the installation and bracing of the forms. Bed course material shall be placed to the depth and section shown on the plans. When the layer required exceeds six inches, two layers of approximately equal depth shall be placed and each layer thoroughly compacted so that it is hard and unyielding. The wetting of bed course material may be required to obtain the compaction.

- B. Finishing: The surface shall be finished with a wooden float. No plastering will be permitted. The edges shall be rounded with an edger having a radius of 1/4 inch. The surface of the sidewalk, after the floating and screeding process is completed, shall be finished with a broom of a type approved by the Engineer, drawn over the surface parallel to the transverse joints. Special texturing on sidewalk ramps shall be installed in accordance with construction plan details.

- C. Joints: Unless otherwise indicated on the plans or directed by the Engineer, expansion joints shall not be used in the sidewalk. Expansion joints shall be formed around all appurtenances such as manholes, utility poles and other obstructions extending into and through the sidewalk. Pre-formed joint filler 1/4 inch thick shall be installed in these joints. Expansion joint filler of the thickness indicated shall be installed between concrete sidewalks and any fixed structure such as a building or bridge. This expansion joint material shall extend for the full depth of the walk. Between the expansion joints, the sidewalk shall be divided at intervals of 5 feet by dummy joints formed by sawcutting or other acceptable means as directed to provide grooves approximately 1/16 inch wide and at least 1/3 of the depth.

When the sidewalk is constructed next to a concrete curb expansion, joint material shall be placed between sidewalk and curb for the depth of the sidewalk.

- D. Curing: During the curing period all traffic, both pedestrian and vehicular, shall be excluded. Vehicular traffic shall be excluded for such additional time as the Engineer may direct.

- E. Backfilling: Before the concrete has been opened to traffic, the space on each side of the sidewalk shall be backfilled to the required elevation with suitable material, firmly compacted and neatly graded.

LANDSCAPE GRADING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:

- Finish grading; bring rough grade in areas to design elevations as shown on the drawings.
- Topsoil: Work shall consist of furnishing, placing and shaping topsoil or placing, spreading, and shaping topsoil form stockpiles or stripped areas.

PART 2 – PRODUCTS

2.01 TOPSOIL

- A. Topsoil shall be loose, friable, reasonably free of admixtures of subsoil, free from refuse, stumps, roots, brush, weeds, rocks, and stones 1 1/4 inch in overall dimensions. The topsoil shall also be free from any material that will prevent the formation of a suitable seedbed or prevent seed germination and plant growth. It shall contain not less than three (3) nor more than twenty (20) percent organic matter. Any material which has become mixed with undue amounts of subsoil during any operation at the source or during placing or spreading will be rejected and shall be replaced by the Contractor with acceptable material.

SITE ENGINEER:



CIVIL ENGINEERING ASSOCIATES, INC.
10 MAIN STREET, NEW FANE, VERMONT 05458
802-864-2223 FAX: 802-864-2271 web: www.csa-vt.com

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DRAWN BY
MAB

CHECKED BY
SAV

APPROVED BY
SAV

OWNER:

**BURLINGTON
COLLEGE**

**351 NORTH AVE
BURLINGTON VERMONT
05401**

PROJECT:

**BUILDING
RENOVATION AND
SITE
IMPROVEMENTS
329, 351 NORTH
AVE.**

BURLINGTON, VT



LOCATION MAP

1" = 200'

DATE	CHECKED	REVISION
12/18/15	SAV	LOCAL PLAN SUBMITTAL

SITE SPECIFICATIONS

DATE	DRAWING NUMBER
12/18/2015	C5.1
SCALE NONE	
PROJ. NO. 14215	

PART 3 – EXECUTION

3.01 SUBGRADE PREPARATION

- A. Clean subgrade of all stumps, stones, roots, trash or other materials which might hinder proper tillage or spreading.
- B. All surfaces on which topsoil is to be placed shall be graded to a reasonably true surface and scarified by raking, discing or other approved means to a minimum depth of two inches before placing topsoil.

3.03 PLACING TOPSOIL

- A. Minimum final depth of topsoil shall be 4 inches.
- B. Place topsoil when seeding operations can closely follow spreading operations. Use topsoil in relatively dry state.
- C. Topsoil shall be spread and shaped to the lines and grades shown on the plans, or as directed by the Engineer. The depth stated in the contract to which the topsoil is to be placed is that required after final rolling of the material has taken place. All stones, roots and debris over 1¼ inch in diameter along with any sodding weeds and other undesirable material shall be removed.
- D. After shaping and grading, all trucks and other equipment shall be excluded from the topsoiled area to prevent excessive compaction. The Contractor shall perform such work as required to provide a friable surface for seed germination and plant growth prior to seeding.
- E. It shall be the Contractor's responsibility to restore to the line, grade and surface all eroded areas with approved material and to keep topsoiled areas in acceptable condition until the completion of the work.

SEEDING

PART 1 – GENERAL

1.1 Section Includes:

- A. Seeding.
1. Furnish all labor, materials and equipment to complete all seeding work as shown on the drawings and specified herein.
2. Except where otherwise shown or specified, the Contractor shall seed all areas where new contours are shown on the drawings and all areas where existing ground cover has been disturbed by the Contractor's operations.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.3 PROJECT CONDITIONS

Planting Restrictions: Seeding and initial fertilizing shall be done between May 1st and September 15th unless otherwise authorized. Seeding shall not be done during windy weather or when the ground is frozen, excessively wet, or otherwise untillable. If seeding is done during July or August, additional mulch material may be required. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 SEED

- A. Conservation Seed Mix:

Kind of Seed	Minimum Purity	Minimum Germination	Lbs./Acre
Creeping Red Fescue	98%	85%	22.5
Tall Fescue	95%	95%	22.5
Red Top	95%	90%	3
Birdsfoot Trefoil	98%	85%	9
Annual Ryegrass	95%	85%	3
TOTAL =			60

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum of 85 percent calcium carbonate equivalent and as follows:
1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.

2.3 FERTILIZER

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium.

2.4 MULCHES

- A. Mulch: Provide air-dry, clean, mildew- and seed-free, hay or threshed straw of wheat, rye, oats, or barley.
- B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 percent of dry weight.

PART 3 – EXECUTION .

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.

2. Protect grade stakes set by others until directed to remove them.

- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

- C. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter.

1. Apply fertilizer directly to subgrade before loosening.
- a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
- b. Mix lime with dry soil before mixing fertilizer.

- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

- E. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

- F. Before planting, restore areas if eroded or otherwise disturbed after finish grading.

3.2 APPLICATION RATES

- A. When a soil test is not available, the following minimum amounts should be applied:

1. Agricultural limestone: 2 tons/acre.
2. Nitrogen (N): 50 lbs./acre.
3. Phosphate: 100 lbs./acre.
4. Potash: 100 lbs./acre.
- a. This is the equivalent of 500 lbs./acre of 10-20-20 fertilizer or 1,000 lbs./acre of 5-10-10.
5. Hay mulch: 2 tons/acre.

3.3 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

1. Do not use wet seed or seed that is moldy or otherwise damaged.
2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

- B. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

- C. Protect seeded areas with slopes exceeding 1:3 with erosion-control blankets installed and stapled according to manufacturer's written instructions.

- D. Protect seeded areas from hot, dry weather or drying winds by applying mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a depth of 3/16 inch, and roll surface smooth.

3.4 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.

2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.5 MAINTENANCE

- A. Maintain and establish seeding by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn. Provide materials and installation the same as those used in the original installation.

1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

2. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

- a. Seeded Areas: 90 days from date of Substantial Completion.
- b. When initial maintenance period has not elapsed before end of planting season, or if seeding is not fully established, continue maintenance during next planting season.

3.6 SATISFACTORY CONDITIONS

- A. Installations shall meet the following criteria as determined by Engineer/Owner:

1. Satisfactory Seeded Area: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

- B. Use specified materials to reestablish area that do not comply with requirements and continue maintenance until areas are satisfactory.

3.7 CLEANUP AND PROTECTION



- A. Promptly remove soil and debris, created by work. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

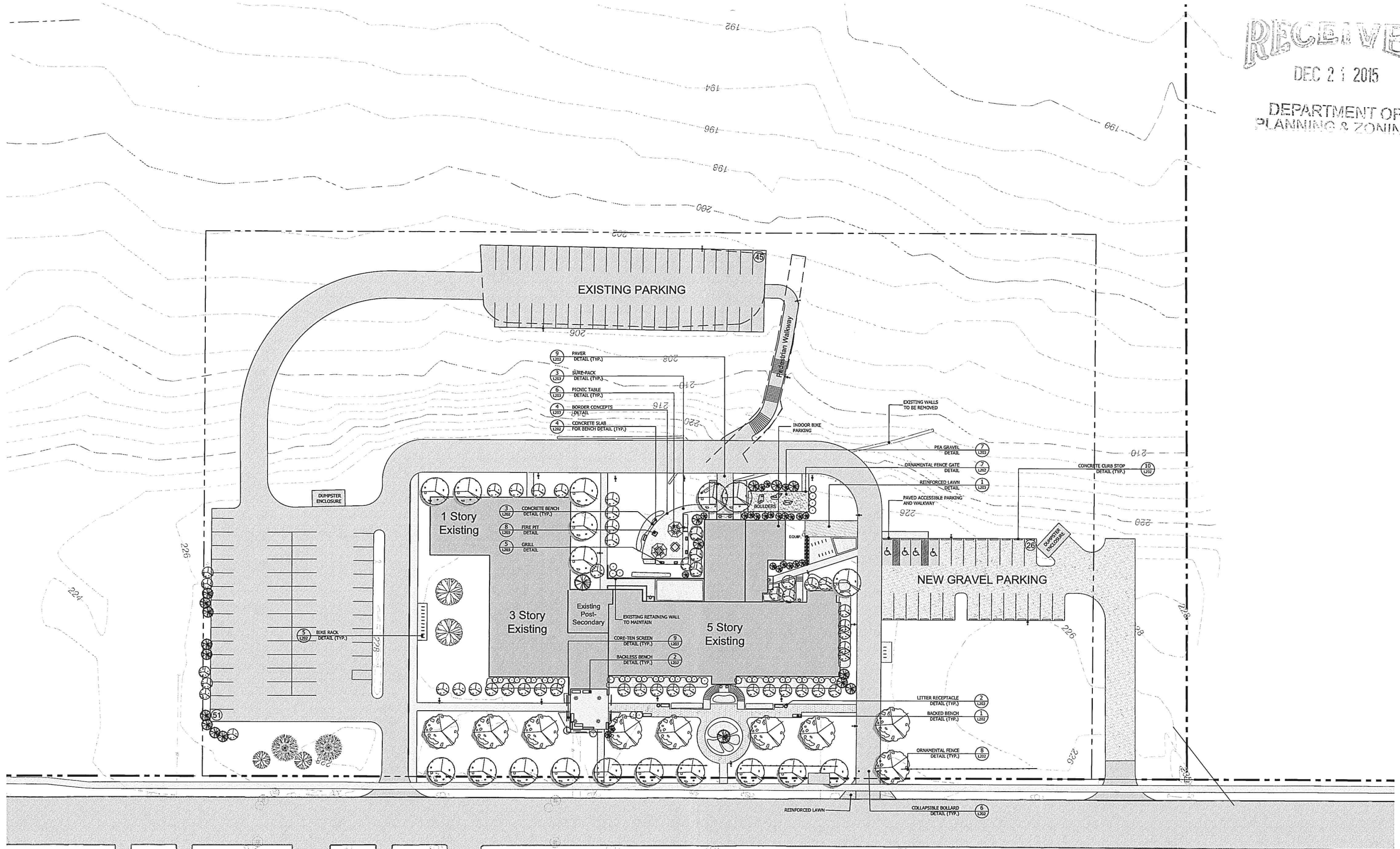
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after lawn is established.

- C. Remove nondegradable erosion-control measures after grass establishment period.

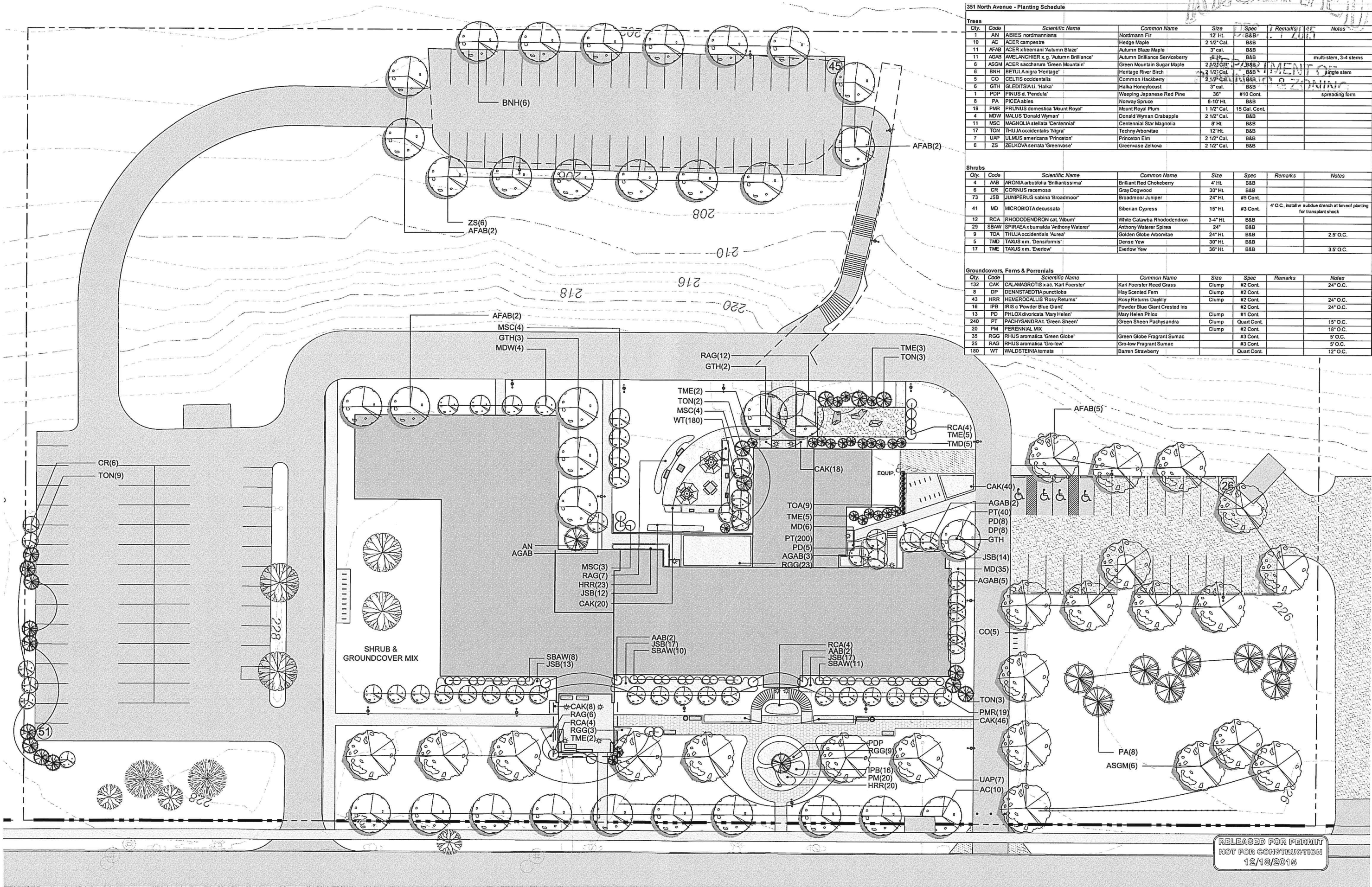
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DEPARTMENT OF
PLANNING & ZONING

SITE ENGINEER:	
	
CIVIL ENGINEERING ASSOCIATES, INC. 10 MANFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403 802-864-2323 FAX: 802-864-2271 web: www.caa-vt.com	
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DRAWN MAB	
CHECKED SAV	
APPROVED SAV	
OWNER: BURLINGTON COLLEGE 351 NORTH AVE BURLINGTON VERMONT 05401	
PROJECT: BUILDING RENOVATION AND SITE IMPROVEMENTS 329, 351 NORTH AVE. BURLINGTON, VT	
	
LOCATION MAP 1" = 200'	
DATE	REVISION
12/18/15	SAV LOCAL PLAN SUBMITTAL
SITE SPECIFICATIONS	
DATE 12/18/2015	DRAWING NUMBER C5.2
SCALE NONE	
PROJ. NO. 14215	



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NOT FOR CONSTRUCTION
12/18/2015



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DEPARTMENT OF
PLANNING & ZONING

LEGEND

- 1.00 LIGHT LEVEL
0.50 LIGHT LEVEL
0.1 LIGHT LEVEL
- PROPOSED LED UNIVERSE
FIXTURE (14', 15' HEIGHT)
(ARROW INDICATES LUMINAIRE
INSTALLATION DIRECTION)

GENERAL LIGHTING NOTES:

1. ALL FIXTURES FULL CUT-OFF
2. CRI MINIMUM OF 70
3. ALL CALCULATIONS SHOWN IN FOOTCANDLES
4. NEARBY EXISTING FIXTURES NOT INCLUDED IN CALCULATIONS

CALCULATION STATISTICS:

AREA	MAX	MIN	AVG	MAX / MIN	AVG / MIN
ROAD/PARKING	3.59	.27	.91	13.10	3.31
SIDEWALKS	2.93	.20	.80	14.60	3.98
CANOPY	3.02	.47	1.40	6.41	2.98

LUMINAIRE SCHEDULE

LABEL	QTY	SYMBOL	MANUFACTURER/FIXTURE/ ORDERING INFO	LAMP	VOLTAGE	FINISH	POLE	ARM	FINISH	MOUNTING HT.
UL4	4	⊙	BEACON - URBAN LARGE LED 3000K (TYPE 1) MRDS-26-24NB-27-3K-T4-UNV-NRW-BBT	24 LED 3K	120*	BBT	SH04-S-14**-4M-OT-BBT	AA-44-S-4-B-BBT	BBT	25'
US3	19	⊙	BEACON - URBAN SMALL LED 3000K (TYPE 3) MRDS-21-24NB-27-3K-T3-UNV-NRW-BBT	24 LED 3K	120*	BBT	SH06-S-25-6Q-OT-BBT	AA-44-S-6-B-BBT	BBT	12.5'
C	11	⊙	PRESCOLITE - LITEFRAME 6" LED OPEN DOWNLIGHT LF6LEDGR ALL CAN LIGHTS TO BE DIMMED TO 35 OR 40%		120*	BLK				8" - 14'

NOTE:
* VOLTAGE TO BE VERIFIED BY ELECTRICAL ENGINEER PRIOR TO ORDERING
** CUT POLE TO 12.5'

NOTE: Walkway Lighting - Light levels for pedestrian areas meet IESNA recommendation per (IESNA) *Lighting for Exterior Environments* (RP-33-99), which recommends a MINIMUM maintained average horizontal illuminance level of 0.5 footcandles and a 4:1 horizontal average to minimum ratio. Light levels are specific to the Intermediate area classification, which is defined as "those areas of a municipality often characterized by moderately heavy nighttime pedestrian activity such as in block having libraries, community recreation centers, large apartment building, industrial buildings, or neighborhood retail stores."

revisions	date	revisions	date
Submission for Preliminary Plat	07/01/2015		
Released for Permit	08/06/2015		
Preliminary Plat Resubmission	12/18/15		

landscape architects • planning consultants

301 college street • burlington • vermont • 05401 802 • 658 • 3555

<http://www.jboyle.com>



MJB
design by
MJB
checked by

TKD
drawn by

6/29/2015
date
1" = 30'
scale

351 North Ave
Lighting Layout Plan

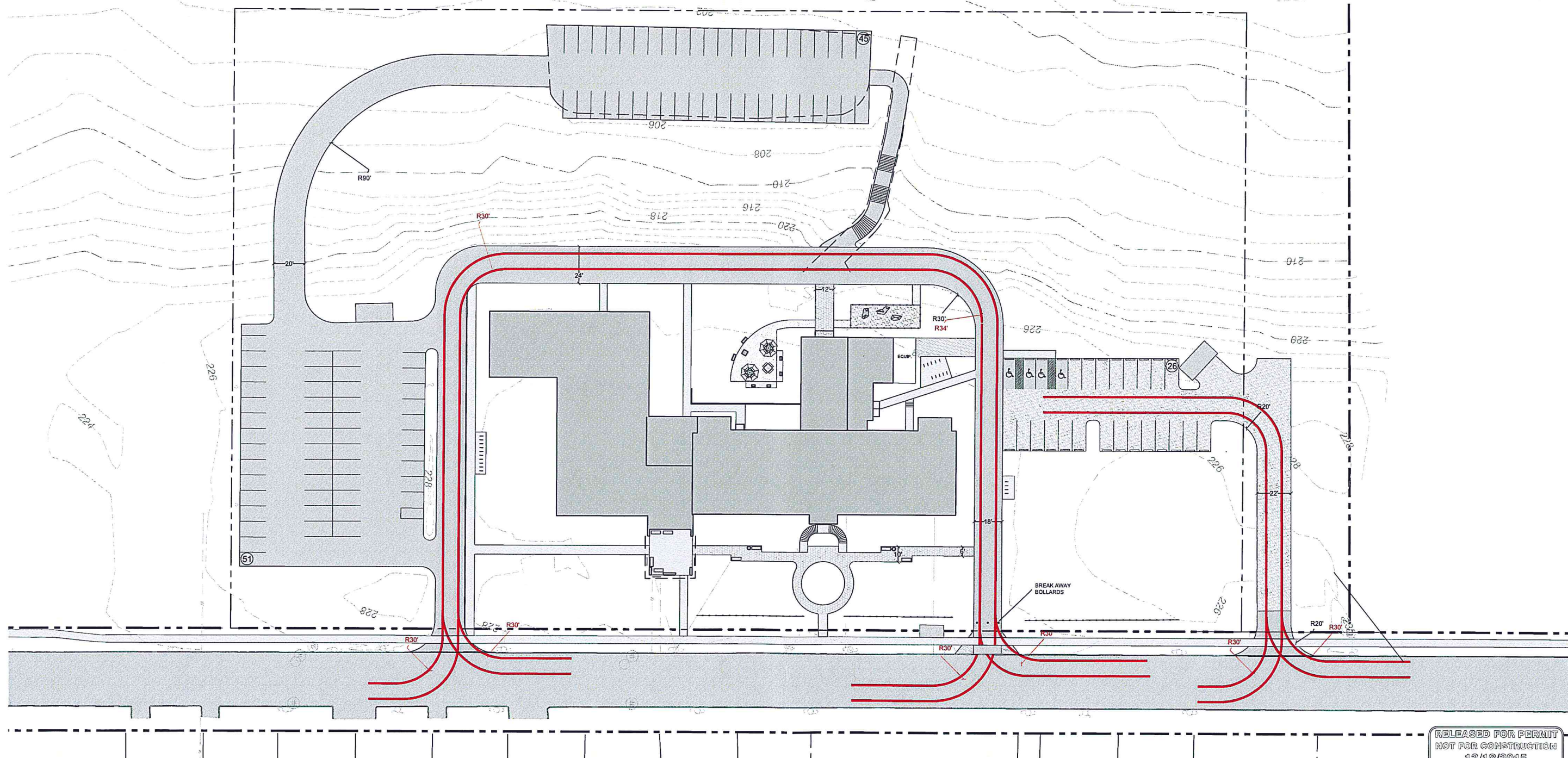
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revisions	date	revisions	date
Sketch Plan Submission	2/26/15		
Preliminary Plat Submission	7/1/15		
Preliminary Plat Resubmission	12/18/15		

T. J. Boyle Associates, LLC

landscape architects	planning consultants					
301 college street	burlington	vermont	05401	802	658	3555



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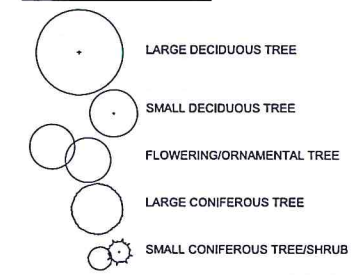
351 North Ave
Fire Access Plan

sheet no;
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LANDSCAPE LEGEND



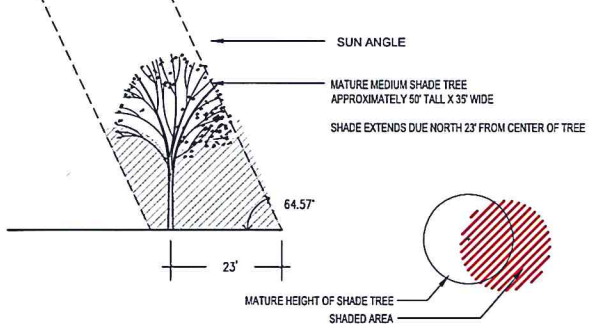
SHADE CALCULATIONS: Plant Sizes and Shadow Offset			
Trees	Mature Height	Mature Canopy Size	Shadow Offset
Large Deciduous	65'	33'	25.0'
Medium Deciduous	50'	40'	19.2'
Small Deciduous	30'	25'	11.5'
Ornamental Deciduous	15-20'	10'	7.5'
Large Coniferous	65'	30'	25.0'
Medium Coniferous	40'	15'	15.4'
Small Coniferous	20'	5-10'	7.5'
All non-conifer tree shadows calculated at a limbed up height of 20'			

SUN ANGLE CALCULATION DATA FOR PROJECT LOCATION

LONGITUDE: 73 D 13' 53" WEST
LATITUDE: 44 D 29' 33" NORTH
CALCULATION DATE: JUNE 21, 2015
ELEVATION: 222'
TIME: SOLAR NOON (11:54 AM EST)

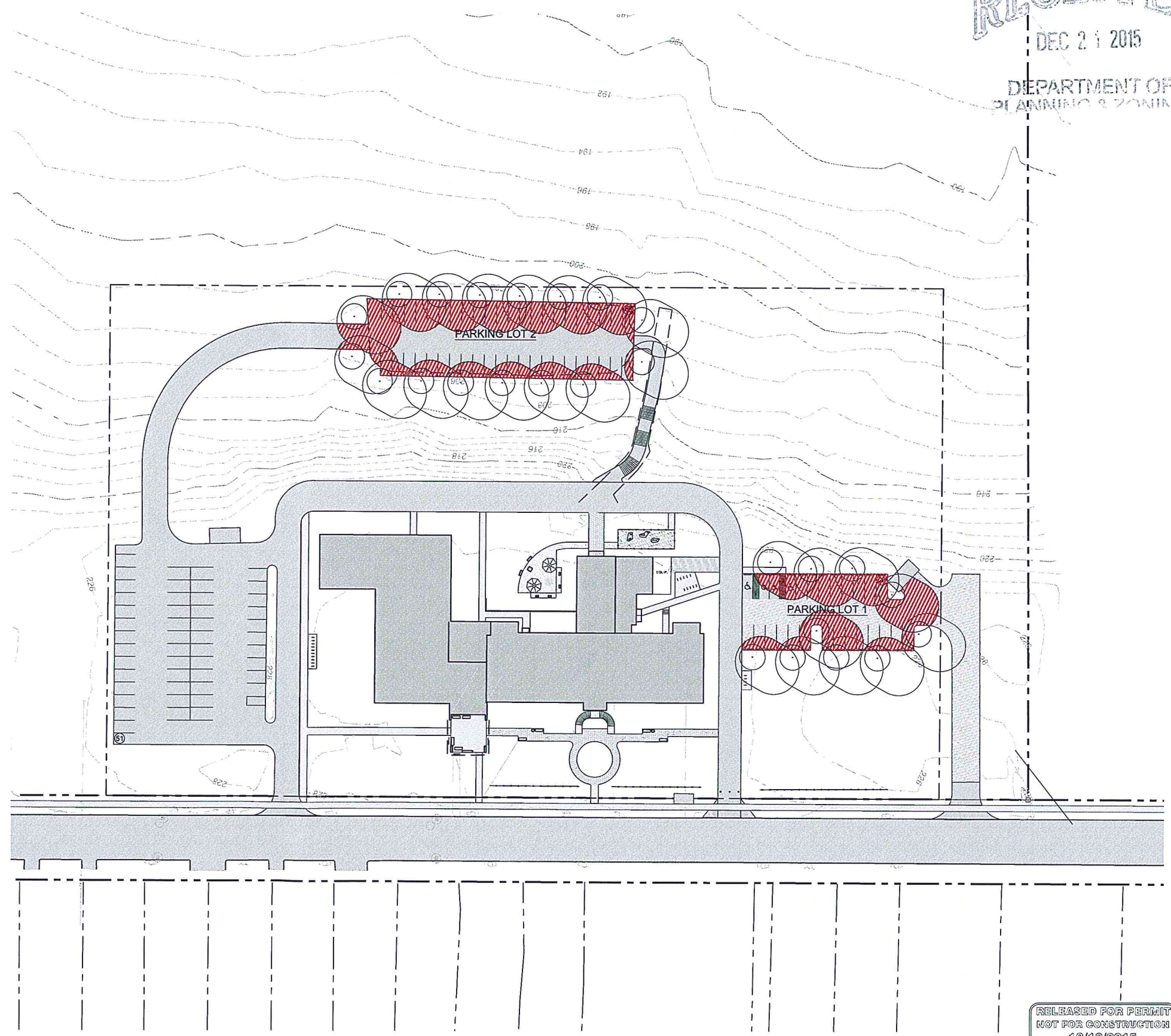
RESULTING SUN
ALTITUDE ANGLE: 64.57°

EXAMPLE:



SHADE CALCULATION TOTALS

TOTAL IMPERVIOUS SURFACE IN PARKING LOT 1	= 8,006 SF
TOTAL SHADE FROM MATURE TREE HEIGHTS LOT 1	= 5,080 SF
TOTAL SHADE	= 63.4%
TOTAL IMPERVIOUS SURFACE IN PARKING LOT 2	= 12,180 SF
TOTAL SHADE FROM MATURE TREE HEIGHTS LOT 2	= 7,685 SF
TOTAL SHADE	= 63.1%
TOTAL SHADE REQUIRED	= 30%



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TREE PROTECTION NOTES:

1. PRIOR TO ANY CONSTRUCTION ACTIVITY, ALL TREE PRESERVATION MEASURES MUST BE IMPLEMENTED.
2. PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS.
3. TREE PROTECTION FENCING SHALL REMAIN INTACT THROUGHOUT ALL CONSTRUCTION ACTIVITY.
4. PRIOR TO THE SITE VISIT ALL TREE PRESERVATION AREAS SHALL BE STAKED OUT ON SITE BY SURVEY.
5. NO MATERIALS OR EQUIPMENT SHALL BE STORED, STOCKPILED OR OPERATED WITHIN TREE PROTECTION AREAS.
6. TREE PROTECTED AREAS WILL BE LEFT AS NATURAL AS POSSIBLE.
7. THE CONTRACTOR CHOSEN FOR THIS WORK WILL BE AN EXPERIENCED TREE SERVICE FIRM THAT HAS SUCCESSFULLY COMPLETED TREE PROTECTION, ROOT PRUNING, AND TRIMMING WORK, SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
8. IN AREAS OF EXCAVATION NEAR TREE, IDENTIFY AND CUT ROOTS IN CONSULTATION WITH OWNER.
9. REMOVE POORLY ATTACHED AND RUBBING LIMBS, CLEAN THE CROWN OF DEAD, DISEASED AND WEAK LIMBS. THINNING OF HEALTHY LIMBS IS NOT RECOMMENDED AT THIS TIME.
10. ANY NECESSARY TRENCHING SHALL BE IMMEDIATELY BACKFILLED WITH REMOVED SOIL OR OTHER HIGHLY ORGANIC SOIL.
11. AN AIR SPADE IS TO BE USED TO EXCAVATE DOWN TO MINIMUM OF 2', SEE DETAIL 88/L200.
12. THERE WILL BE NO EXCAVATION FOR PROPOSED SITE WORK WITHIN FENCED AREA.

GENERAL PLANTING NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON ALL DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK (ANSI) PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. NO PLANT SHALL BE PUT INTO THE GROUND BEFORE ROUGH GRADING HAS BEEN FINISHED AND APPROVED BY THE PROJECT LANDSCAPE ARCHITECT OR EQUAL.
5. PLANTS SHALL BE INSTALLED SUCH THAT THE ROOT FLARE IS AT OR SLIGHTLY ABOVE FINAL GRADE (DUE TO NURSERY PRACTICES THIS MAY REQUIRE REMOVING SOIL FROM THE TOP OF THE ROOT BALL TO LOCATE THE ROOT FLARE).
6. ALL PLANTS SHALL BE BALLED AND BURLAPPED OR CONTAINER GROWN AS SPECIFIED. NO CONTAINER GROWN STOCK WILL BE ACCEPTED IF IT IS ROOT BOUND. ALL ROOT WRAPPING MATERIAL, MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED AT THE TIME OF PLANTING.
7. WITH CONTAINER GROWN STOCK, THE CONTAINER SHALL BE REMOVED AND THE CONTAINER BALL SHALL BE CUT THROUGH THE SURFACE IN TWO VERTICAL LOCATIONS.
8. THE DAY PRIOR TO PLANTING, THE LOCATION OF ALL TREES AND SHRUBS SHALL BE STAKED FOR APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT OR EQUAL.
9. LANDSCAPE ARCHITECT MAY REQUIRE ALL PLANTS BE SPRAYED WITH AN ANTIDESSICANT WITHIN 24 HOURS AFTER PLANTING. IN TEMPERATE ZONES, ALL PLANTS SHALL BE SPRAYED WITH AN ANTIDESSICANT AT THE BEGINNING OF THEIR FIRST WINTER.
10. ALL PLANT BEDS MUST HAVE A MINIMUM PLANT BED DEPTH OF 18" WITH A 2/3 TOPSOIL TO 1/3 COMPOST MIX. REMOVE SUBGRADE AND OTHER FILL IN PLANTING AREAS ON SITE.
11. ALL PLANTS SHALL BE INSTALLED AS PER DETAILS AND THE CONTRACT SPECIFICATIONS.
12. STAKING PLANTS IS AT THE DISCRETION OF THE CONTRACTOR. ONLY STAKE PLANTS AS SPECIFIED BY LANDSCAPE ARCHITECT.
13. THE LANDSCAPE CONTRACTOR SHALL PROVIDE AMENDED BACKFILL AS PER THE CONTRACT SPECIFICATIONS.
14. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL THEN BE WATERED WEEKLY, IF NECESSARY, DURING THE FIRST GROWING SEASON.
15. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
16. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE PLANT LIST FOR SEASONAL REQUIREMENTS RELATED TO THE TIME OF PLANTING.

PLANT SPACING CHART

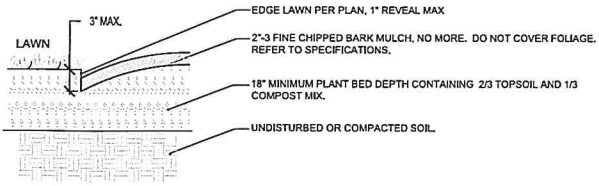
Spacing 'D'	Row 'A'	Number of Plants	Area Unit
6" O.C.	5.2"	4.61	1 SQ. FT.
8" O.C.	6.93"	2.6	
10" O.C.	8.66"	1.66	
12" O.C.	10.4"	1.15	
15" O.C.	13.0"	7.38	10 SQ. FT.
18" O.C.	15.6"	5.12	
24" O.C.	20.8"	2.91	
30" O.C.	26.0"	1.55	
36" O.C.	30.0"	1.25	100 SQ. FT.
4' O.C.	3.46'	7.25	
5' O.C.	4.38'	4.61	
6' O.C.	5.2'	3.2	
8' O.C.	6.93'	1.8	
10' O.C.	8.66'	1.16	1000 SQ. FT.
12' O.C.	10.4'	8	
15' O.C.	13.0'	5	
20' O.C.	17.3'	2.88	
25' O.C.	21.65'	1.85	10,000 SQ. FT.
30' O.C.	26.0'	1.29	
40' O.C.	34.6'	7.22	10,000 SQ. FT.

O.C. = ON CENTER

FOR USE WHEN PLANTS ARE SHOWN EQUIDISTANT FROM EACH OTHER (AS SHOWN)

PLANT SPACING CHART

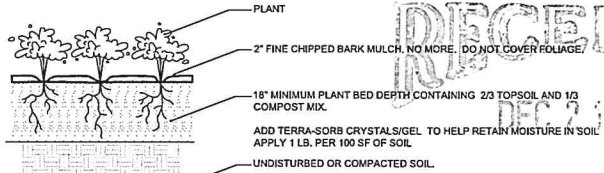
7 PLANT SPACING CHART DETAIL
L200 NTS



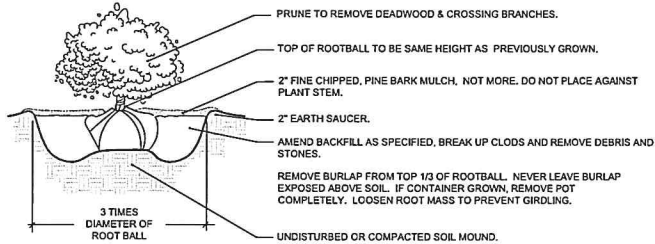
6 TYPICAL PLANT BED/PLANTING AREA DETAIL
L200 NTS



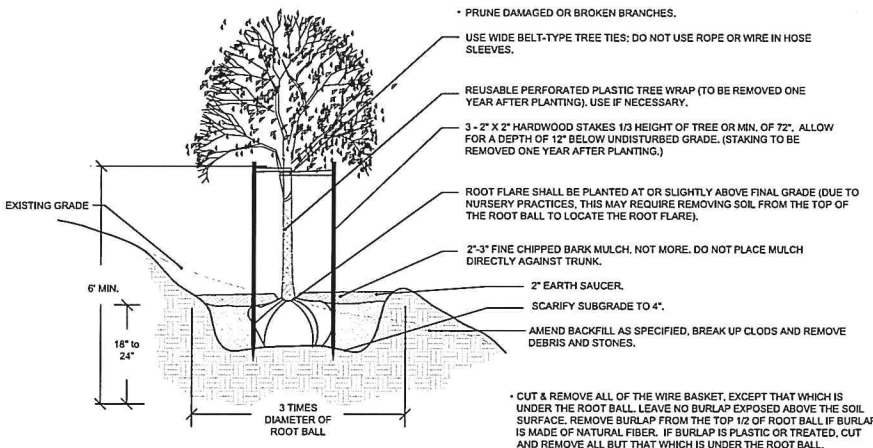
5 LAWN AREA/TOPSOIL & SEEDING DETAIL
L200 NTS



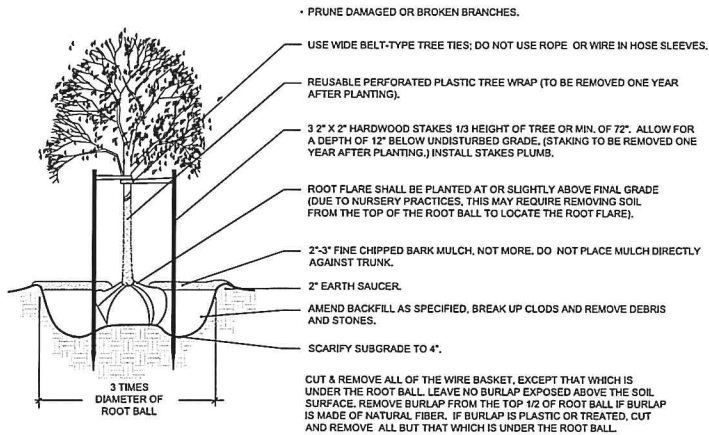
4 TYPICAL GROUNDCOVER PLANTING
L200 NTS



3 SHRUB PLANTING
L200 NTS

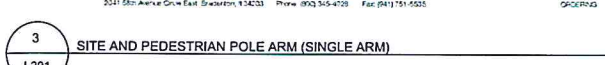
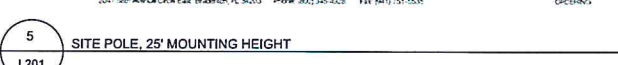
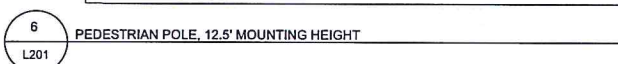


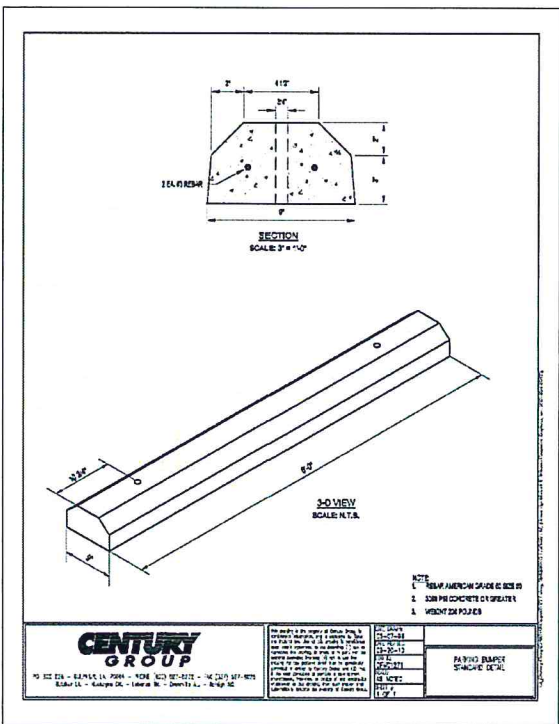
2 TREE PLANTING ON SLOPE DETAIL
L200 NTS



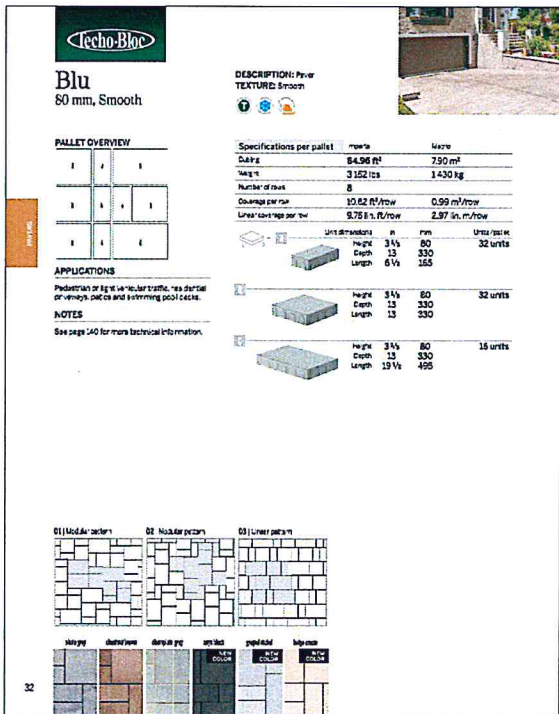
1 TREE PLANTING DETAIL
L200 NTS

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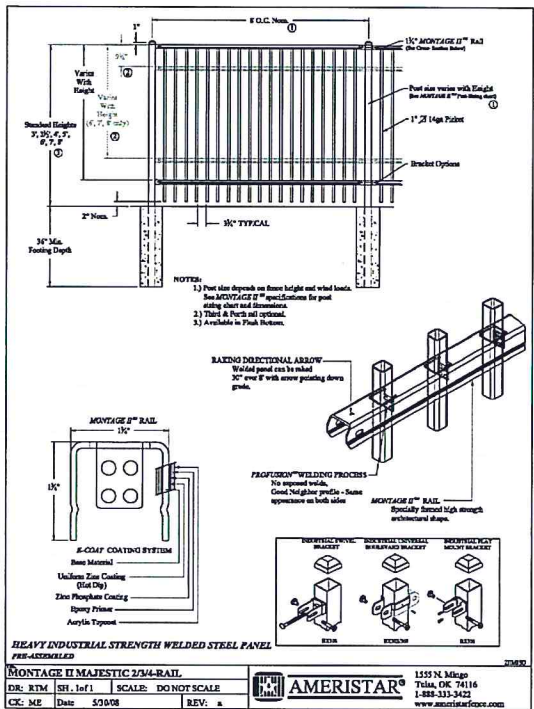




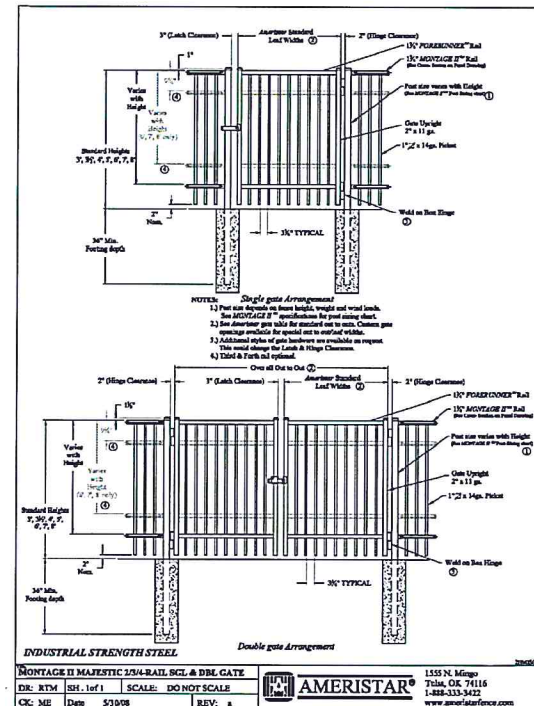
10 CONCRETE CURB STOP DETAIL
L202 NTS



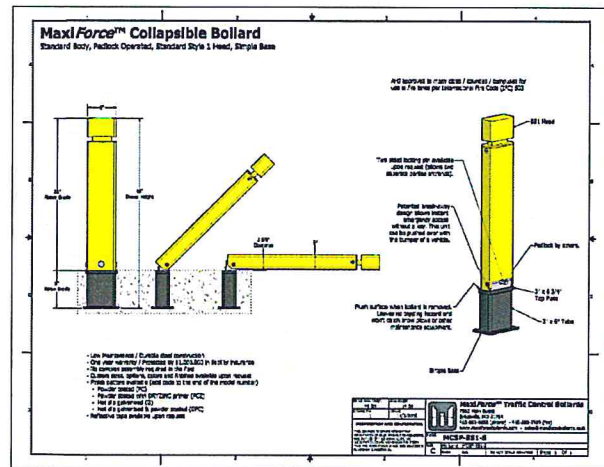
9 PAVER DETAIL
L202 NTS



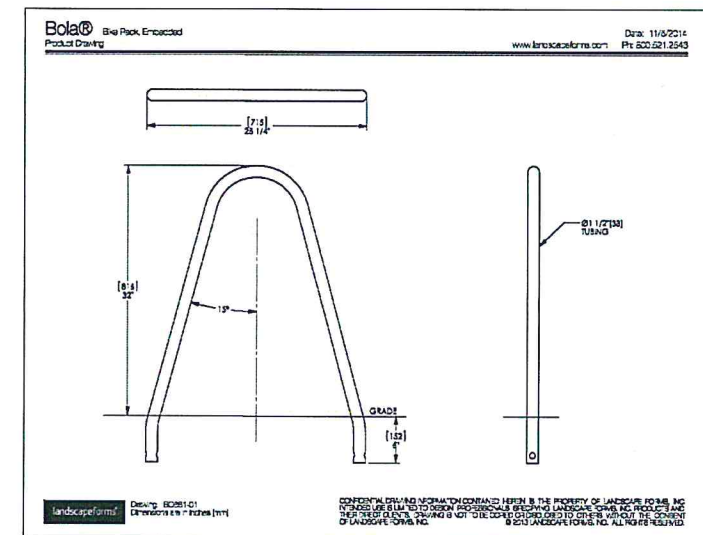
8 ORNAMENTAL FENCE DETAIL
L202 NTS QTY: 330 LF



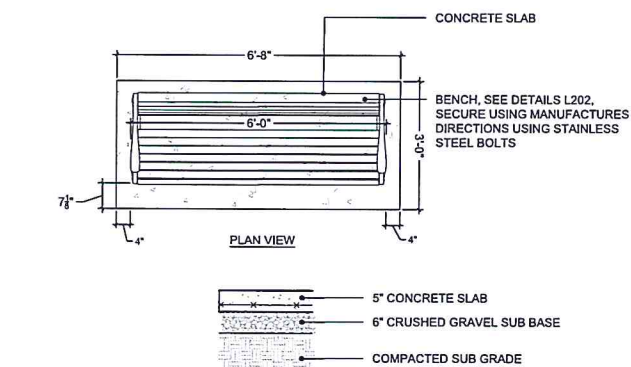
7 ORNAMENTAL FENCE GATE DETAIL
L202 NTS



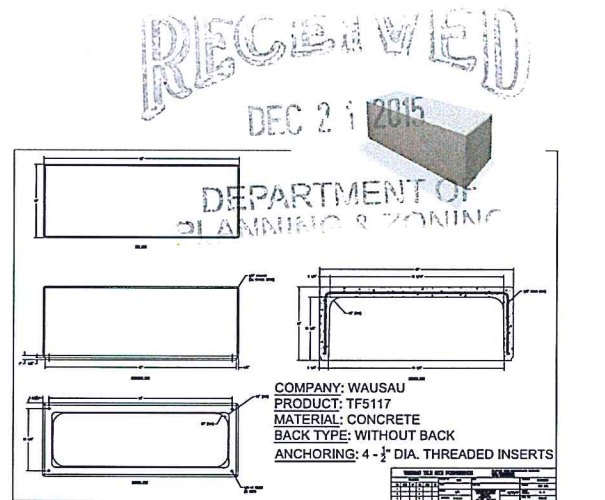
6 COLLAPSIBLE BOLLARD DETAIL
L202 NTS



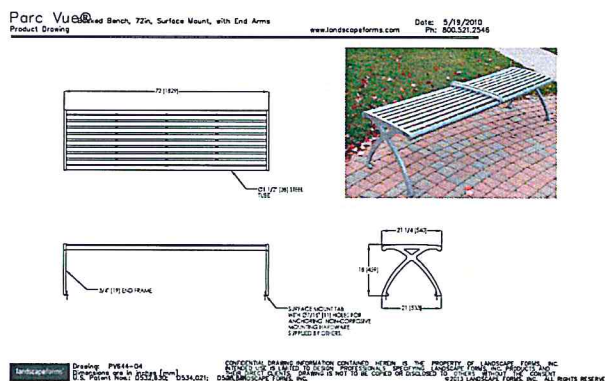
5 BIKE RACK DETAIL
L202 NTS COLOR: TITANIUM



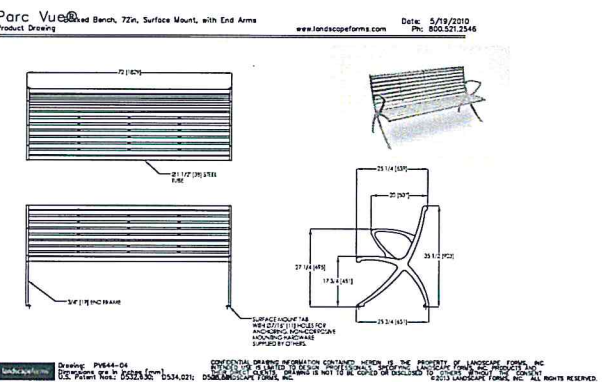
4 CONCRETE SLAB FOR BENCH DETAIL
L202 NTS



3 CONCRETE BENCH DETAIL
L202 NTS COLOR: FRENCH GRAY

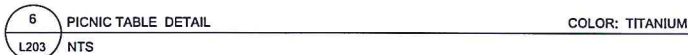


2 BACKLESS BENCH DETAIL
L202 NTS COLOR: TITANIUM



1 BACKED BENCH DETAIL
L202 NTS COLOR: TITANIUM

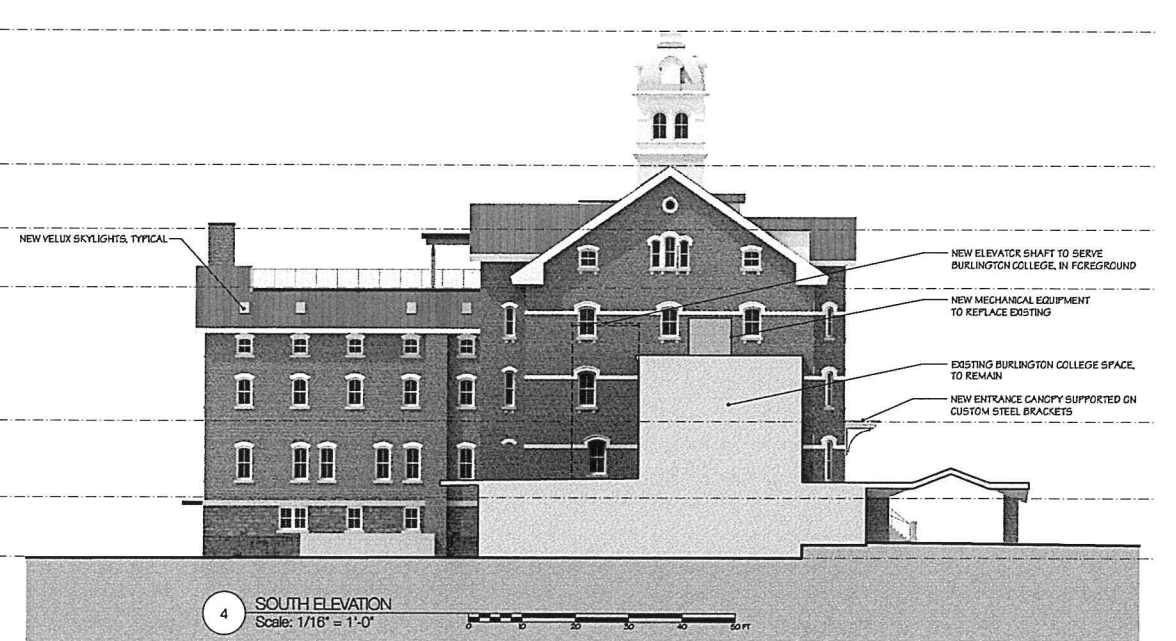
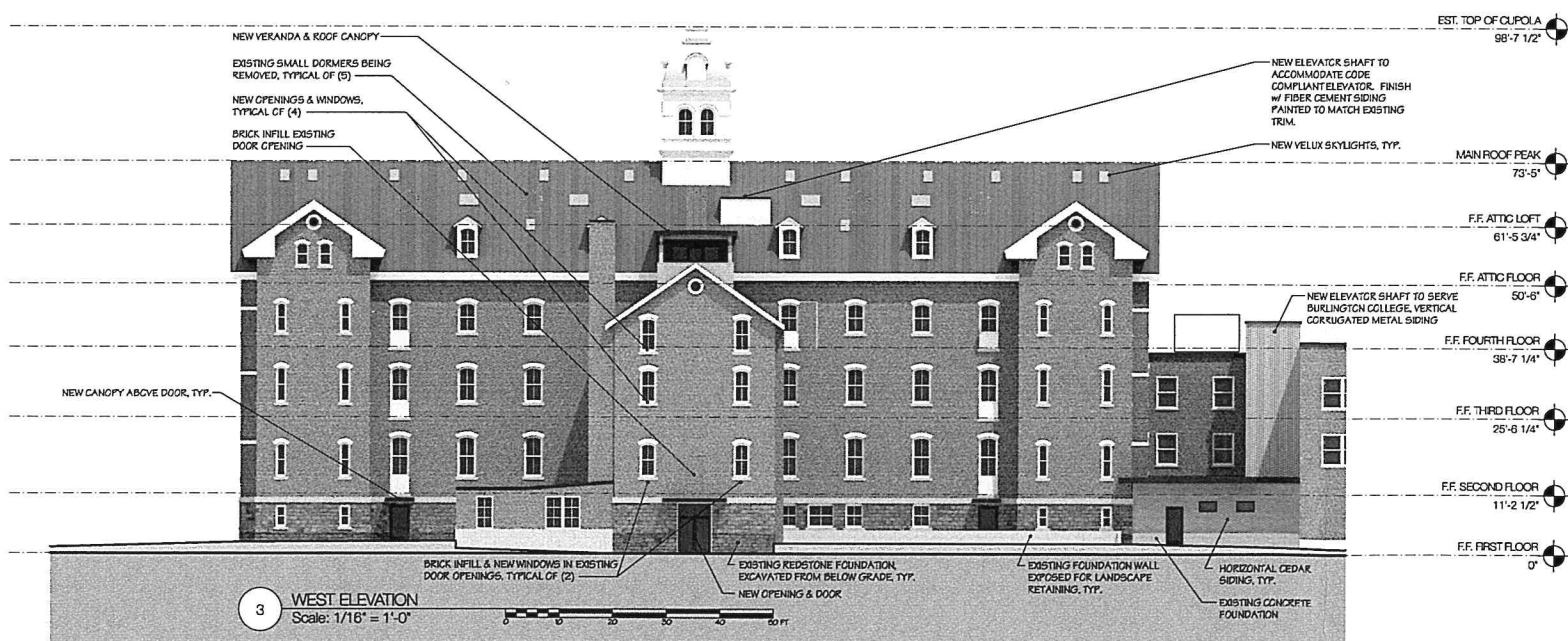
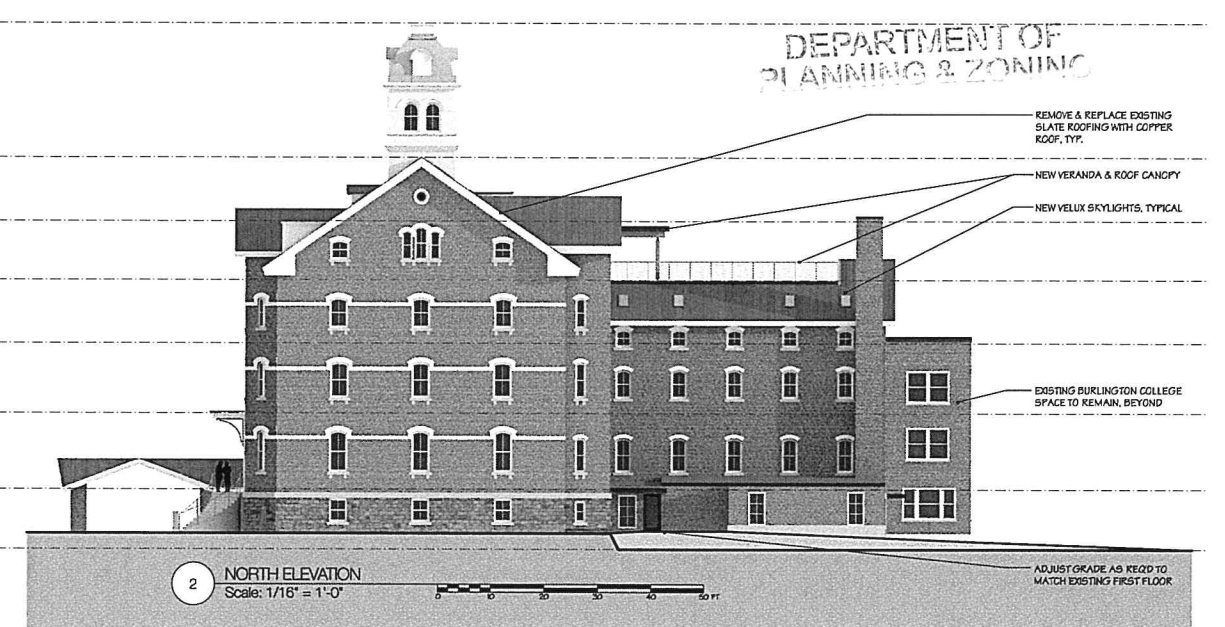
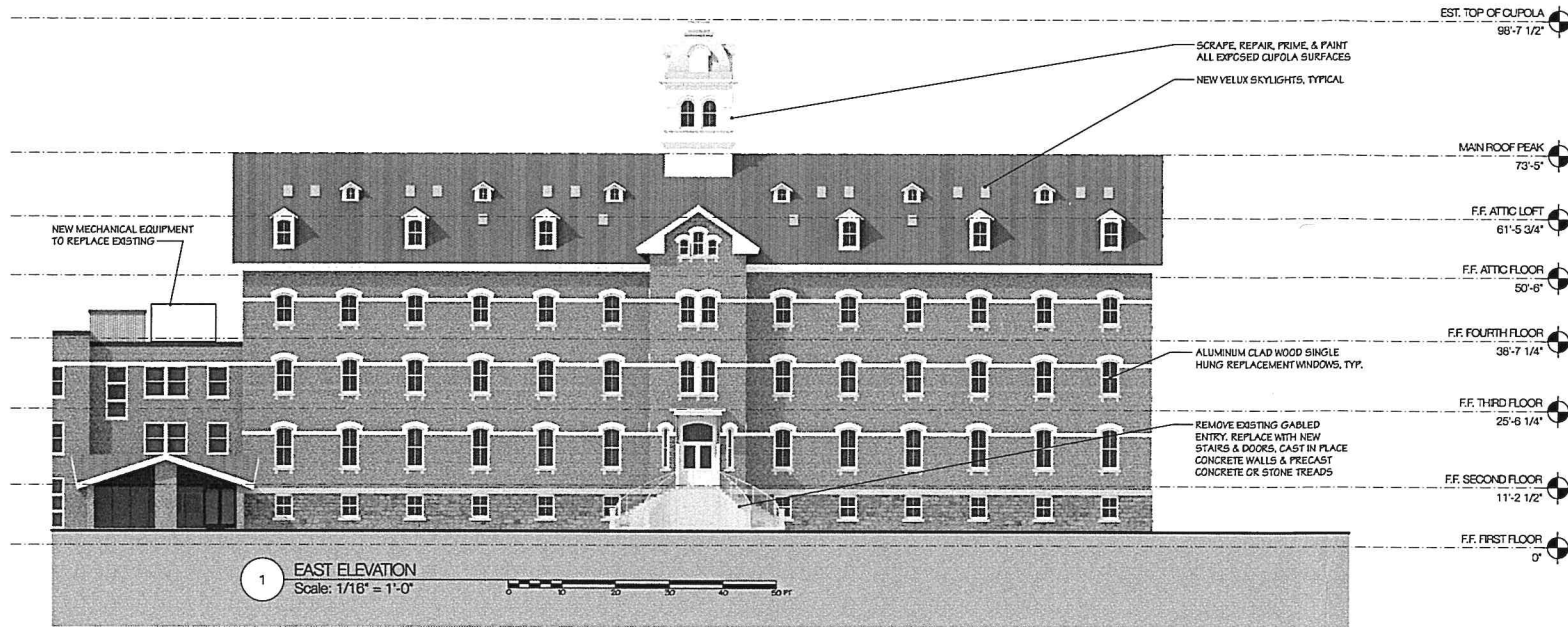
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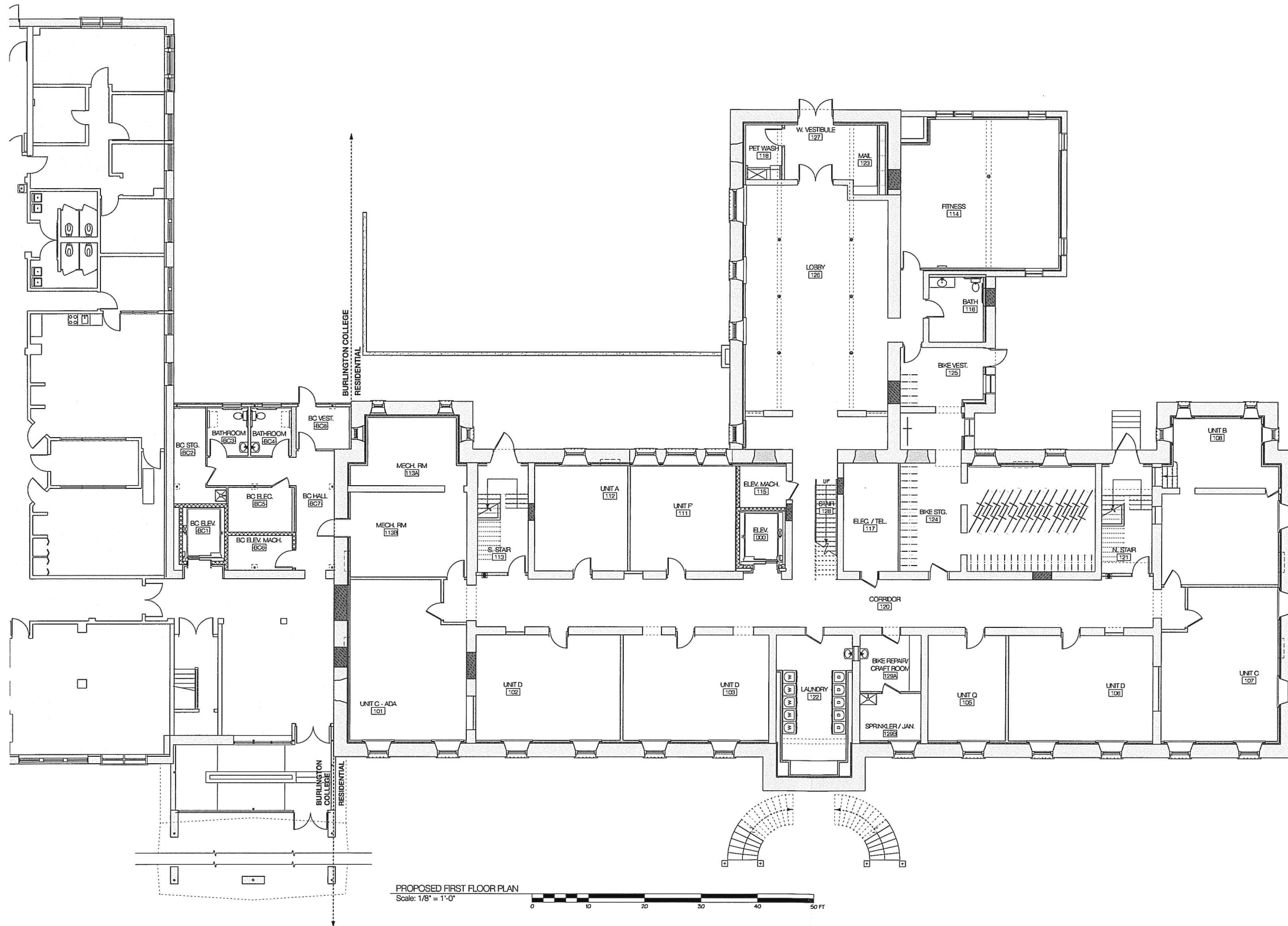
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